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2024 Kış Sayısı

Değerli yazarlarımız, hakemlerimiz, editörlerimiz ve okuyucularımız!

Rast Müzikoloji Dergisi, yaratıcı ve çalışkan müzik araştırmacılarının katkısıyla 12. cilt 4. Sayıyı sunar. Bu sayımızda 5 makale ile karşınızdayız. Yazarlarımıza hakem inceleme süreçlerindeki sabırları için teşekkür ederiz. Bu sayıda emeği geçen Rast Müzikoloji Dergisi ekibine yürekten teşekkür ederiz.

Rast Müzikoloji Dergisi, müzikoloji alanındaki üretken bilim insanlarının dergimize daveti ve makale işlem ücreti alınmaması konusunu geçen sayıda duyurmuştu. Aynı şekilde editör kurulumuza kendilerini davet ediyoruz. Daha önceki kararlarımızda olduğu gibi editör kurulu üyelerinin aktif katılımlarının derginin dinamizmi açısından önemli olduğunu belirtiriz. Dergipark'ın yeni güncellemesi ile editör kurulu üyelerinin sistemden onay vermeleri gerekmektedir. Bu açıdan Dergipark sisteminden davetlerimizi kontrol ediniz. Önümüzdeki yıl bilhassa makale yazım dilinin İngilizce olması konusunda yazarlarımızı teşvik ediyoruz. Şu an submit edilen makalelerinin çoğunun İngilizce olması da sevindiricidir.

Bir diğer önemli husus AI kullanımının artmış olması ve bu durumla ilgili olarak "Yapay Zeka Kullanım ve Şeffaflık Beyanı" politikamızı Mayıs 2024'te sizlere duyurmuştur. Lütfen buraya tıklayarak okuyunuz. Dergimizin bu konuda çok hassas olduğunu tekrar beyan ederiz.

TR Dizin süreciyle ilgili yükümlülüklerimizi yerine getiriyoruz. Bu konudaki duyarlıklarımızı her zaman siz okurlarımızla paylaştık. Hakem raporlarımızı TR Dizin platformuna yüklüyoruz. Dergimizin dünyanın en kaliteli dergileri arasına girmesi hedefimizden şaşmayacağız.

Dergimiz bu sayıdaki makaleleri sizlerin beğenisine sunuyoruz.

İyi okumalar dileriz.

En içten saygılarımızla

Rast Müzikoloji Dergisi Editörlüğü

Winter Issue of 2024

Dear authors, reviewers, editors and readers!

The Rast Musicology Journal presents Volume 12, Issue 4, with contributions from the creative and diligent music researchers. In this issue, we feature five articles. We thank our authors for their patience during the peer review process. We also extend our heartfelt gratitude to the Rast Musicology Journal team for their efforts in this issue.

Rast Musicology Journal had announced in the previous issue the invitation to productive scholars in the field of musicology to contribute to our journal, and the waiver of article processing fees. Likewise, we invite scholars to join our editorial board. As in our previous decisions, we emphasize that the active participation of the editorial board members is crucial for the dynamism of the journal. With the new update of Dergipark, editorial board members are required to give approval through the system. In this regard, please check our invitations from the Dergipark system. For the upcoming year, we are encouraging our authors to write articles in English. It is also encouraging that most of the submitted articles are currently in English.

Another important issue is the increased use of AI, and regarding this, we announced our 'Artificial Intelligence Usage and Transparency Statement' policy in May 2024. Please click here to read it. We would like to reiterate that our journal is very sensitive about this matter.

We are fulfilling our obligations regarding the TR Index process. We have always shared our sensitivities on this matter with you, our readers. We upload our reviewers's reports to the TR Index platform. We will not deviate from our goal of placing our journal among the highest quality journals in the world.

We present the articles in this issue for your appreciation.

We wish you good reading

Best regards

Rast Musicology Journal Editorial

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İçindekiler

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Research Article

The effects of holding positions on the frequency response of dynamic vocal microphones

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Abstract

This study examines the effects of different holding positions of the microphone body and capsule on the frequency response of dynamic vocal microphones. Microphones enable the amplification and recording of sound by converting sound waves into electrical signals. Based on their operating principles, microphones are divided into two primary types: electromagnetic and electrostatic. The sample for this study consists of dynamic microphones, which fall under the category of electromagnetic microphones. Dynamic microphones are commonly preferred in live performances and studio recordings due to their durability, affordability, and low self-noise levels. In this study, the effects of various grip positions on frequency response were analyzed using the Shure SM-58 model dynamic microphone, which is widely used in both studio and live sound environments. The selected grip positions include the standard stand position, fully enclosed capsule grip, semi-open capsule grip, and body grip. These positions comprise the sample for the study. The research was conducted in a controlled studio environment, isolated from external factors and with appropriate acoustic conditions. Audio samples were collected by having a professional vocalist sing the G4 note (392 Hz) on the syllable "na" for 5 seconds. The recordings, conducted at an industry-standard 96 kHz sampling rate and 24-bit resolution, were repeated for each grip position and digitally transferred as .wav files. The .wav files were normalized in Audacity in preparation for Fast Fourier Transform (FFT) analysis. During the data analysis process, the normalized .wav files were analyzed via FFT implemented in Python. The data were examined by analyzing the first seven harmonics within three octaves above the G4 note (392 Hz). Referring to the standard stand position, the Fully Closed Grip Position on the Capsule exhibited a significant reduction in lower frequencies alongside an increase in upper frequencies. Similarly, the Capsule Half-Open Grip Position resulted in decreased low and mid frequencies, with a corresponding rise in high frequencies. Observations from the Microphone Body Grip Position also indicated a decrease in lower frequencies and an enhancement in upper frequency regions. Based on these findings, this study aims to provide vocal performers, recording engineers, and researchers in music technology with insights into achieving higher precision and professionalism by understanding how appropriate microphone holding techniques influence the sound's balance.

Keywords

dynamic microphones, frequency analysis, frequency response, microphone holding positions

Introduction

The transmission and perception of sound have played a significant role throughout history and have evolved further with technological advancements. Microphones are one of the essential pieces of equipment for amplifying and transmitting sound. They took their place in history when Emile Berliner patented the carbon microphones in 1877 (Eargle, 2012: 2). Durmaz defines the microphone as "an electro/electro-mechanical circuit element that converts molecular vibrations in an acoustic environment into electrical signals" (Durmaz, 2009: 217). As the first link in the chain of transferring sound waves to digital or analog media, the microphone is one of the most crucial devices used in studio

environments (Önen, 2007: 106). Essentially, a microphone is a transducer that converts sound waves into electrical signals (Huber & Runstein, 2005: 116). The widespread use of electric microphone recordings in 1925 marked the beginning of a new era in the history of sound recording (Ünlü, 2016: 20-49). Microphones fundamentally convert acoustic energy into electrical energy and are categorized into two types based on their operating principles: electromagnetic and electrostatic. Dynamic and ribbon microphones fall under the electromagnetic category, while condenser and electret condenser microphones belong to the electrostatic group (Önen, 2007: 105). Dynamic microphones are among the most popular types of microphones frequently used on stage and in amateur studios. A dynamic microphone consists mainly of a diaphragm, coil, and magnet system. When sound waves cause the diaphragm and coil to vibrate, they act like an electromagnet, inducing an electrical current in the coil (Rosinski, 2022: 21). The microphone's response to sudden transitions and high-frequency signals depends on the weight of its moving parts. In dynamic microphones, the diaphragm and coil move together and are relatively heavy, resulting in a frequency response that drops above 10 kHz. These microphones also possess a resonant frequency between 1–4 kHz, positively influencing voice intelligibility. Due to these characteristics, they are frequently preferred by vocalists, especially in live performances (Owsinski, 2005: 2-3). In this context, sound samples were collected using the Shure SM-58, a dynamic vocal microphone widely preferred in live performances.

In addition to their electronic and mechanical components, microphones have an outer surface that can be held by hand, known as the housing, which directly affects the microphone's operation. This component, with its physical structure around the diaphragm, helps define the microphone's character and its intended usage based on its physical shape. Additionally, it influences how vibrations are transmitted to the diaphragm (Işıkhan, 2013: 231).

Understanding the effects of microphone holding positions on frequency response is of critical importance for sound engineers and performing artists. Lyons (2001: 125) explains that Fast Fourier Transform (FFT) analysis is a widely used method in signal processing, converting signals from the time domain to the frequency domain, allowing for the analysis of the signal's frequency components. This analytical method has been recognized in various studies as an ideal tool for quantitatively evaluating the impact of microphone holding positions on sound quality.

In this study focusing on the frequency response of dynamic microphones and aims to determine how different grip positions, such as closing or opening the microphone capsule, affect the frequencies perceived by the microphone. The findings will provide valuable information that will help sound engineers and performing artists make more informed decisions in terms of microphone use.

Objective of the Study

The primary objective of this research is to examine the effects of different holding positions on the frequency response of dynamic vocal microphones. Dynamic microphones are essential audio equipment frequently preferred in live performances and studio recordings due to their durability and ability to withstand high sound pressure levels. However, there is limited information on how these microphones respond to different holding positions in terms of frequency response.

This study makes a significant contribution to the audio technology literature by analyzing the effects of microphone hand positions on practical applications. The results will help sound engineers and artists make more informed decisions regarding microphone use, thereby enhancing the

quality of performances. Therefore, the research findings aim to contribute to the development of better and more informed practices in the fields of audio engineering and performing arts, ultimately serving to improve overall sound quality.

'Microphone grip positions have a direct impact on the tonal quality and clarity of sound. Eargle (2012) states that 'The way a microphone is held can significantly affect tonal characteristics and clarity, especially in dynamic and hand-held types' and that this effect is produced by changes in resonance and directional response' (Eargle, 2012, p. 135).

Understanding how microphone grip affects sound quality and the overall success of a performance during live performances and studio recordings is a critical factor for sound engineers and performing artists. This study provides practical recommendations for more informed and effective microphone use by supporting the effects of microphone holding positions on frequency response with quantitative data.

Research Problem

The problem statement of this research was defined as: 'How do different holding positions of dynamic vocal microphones affect the microphone's frequency response?' and four different microphone holding positions were analyzed to explore answers to this question.

Method

This study employs a quantitative research model to examine the effects of different holding positions on the frequency response of dynamic vocal microphones. Within this scope, descriptive methods and content analysis have been utilized. The study was conducted in a controlled studio environment, where a *quasi-experimental research design* was implemented to obtain numerical data, allowing for objective control of variables (Creswell & Creswell, 2018). For data analysis, the FFT (Fast Fourier Transform) method was used (Kammler, 2000: 291). FFT is a mathematical computation method that separates signals into their frequency components (Downey, 2014: 13). Fourier Transform converts a signal from its time and spatial representation to a frequency-based representation, with broad applications in fields such as Engineering, Physics, Mathematics and Computer Science. By converting sound signals from the time domain to the frequency domain, FFT analysis enables a detailed examination of the frequency response under various microphone holding positions. This method is widely used in sound engineering and signal processing as it allows for a numerical evaluation of each holding position's effects by separating the signal into its frequency components (Marks II, 2008: 3). Using this approach, microphone holding positions were treated as the independent variable, while the microphone's frequency response was the dependent variable, aiming to reveal the specific effects of holding positions on sound frequencies through objective data.

In the study, sound recordings were taken and analyzed using four different holding positions: the standard stand position, fully enclosed capsule grip, semi-open capsule grip, and body grip.

In the experimental design, the microphone holding positions identified as independent variables—standard stand position, fully enclosed capsule grip, semi-open capsule grip, and body grip—were systematically applied, and separate sound recordings were taken for each technique. The widely preferred SM58 dynamic microphone model was used for the recordings. The sound recordings were performed by a professional vocalist, who sang the G4 note at 392 Hz on the syllable "na" for 5 seconds for each holding position. This process was repeated for the four different holding positions (standard stand position, fully enclosed capsule grip, semi-open capsule grip, and body grip). Recordings were take using Logic Pro X DAW at a 96 kHz sampling rate and 24-bit

resolution, with a Shure SM58 microphone, through an Orion 32+ AD converter and a Grace Design M801 microphone preamp. All recordings were conducted in an acoustically controlled studio environment, such as an anechoic chamber.

The recorded sounds were edited and normalized using Audacity software before analysis. Each recording was prepared for FFT analysis. Frequency analyses were performed using the Python programming language with FFT codes specifically compiled for this study. In the FFT code, a window interval of 200 Hz was applied, with a resolution of sample rate / 1, and the analysis range was set between 300 Hz and 3200 Hz.

The human ear can generally resolve only the first five to seven harmonics. This is true when the frequency resolution is greater than the spacing between harmonics, which exceeds the critical bandwidth. Beyond the seventh harmonic, individual harmonics are no longer resolved separately, as the critical bandwidth surpasses the frequency gap between harmonics (Howard & Angus, 2009:140). Zeren (2000: 274) notes that if a complex sound is sustained long enough, only the first six partials are perceptible, while the seventh is extremely difficult to detect, even in electronically generated pure complex sounds. Therefore, in the analysis of the sound files, the range up to three octaves above the fundamental frequency (392 Hz G4), extending to 3136 Hz (G7), was considered. FFT analyses have revealed, in detail, the effects of each hand position on the microphone's frequency response.

After obtaining quantitative data, the results were interpreted within a qualitative framework. At this stage, practical issues and solutions that sound engineers and performing artists may encounter in real-world applications were emphasized. The research findings were examined in detail to understand the effects of microphone holding positions on the tonal quality, clarity, and overall performance of the sound.

Results

Standard Stand Position

In this microphone position, the microphone's response within the test environment was measured. This data allows for a comparison of the three other holding positions in relation to the standard stand position.

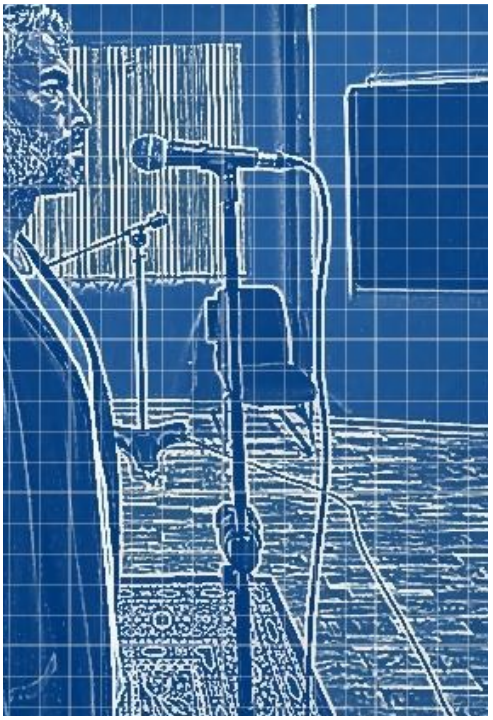

Figure 1. Standard stand position

The microphone was positioned in the standard stand position (figure 1), placed on a mount on the stand. This method of microphone placement is commonly preferred in live events and studio applications. In this setup, the capsule and body of the microphone are not subject to any manipulation, and it is considered a placement that allows the microphone to deliver its optimal performance.

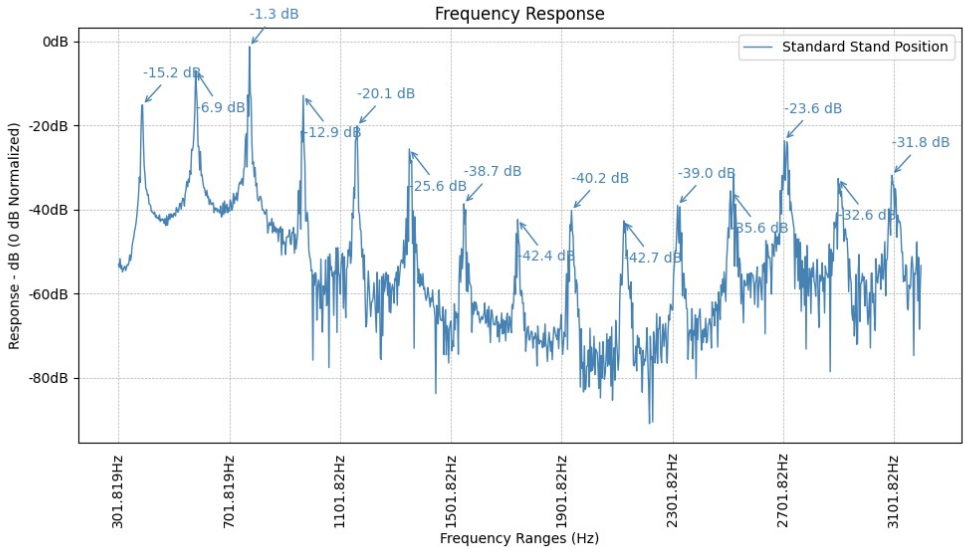

Figure 2. FFT standard stand position

The data obtained from the standard stand position (figure 2) serves as a reference for different holding positions. When conducting FFT analysis, the data for the G4 note at 392 Hz was found to be significant within the range of 300 Hz to 3136 Hz, and all analyses were carried out using this range. The data recorded in the standard stand position, without any external manipulation, was regarded as the baseline data and used as the reference value for the microphone's standard response.

Fully Enclosed Capsule Grip

In this position, the front part of the microphone capsule was left open, while the surrounding area of the capsule was enclosed by hand (figure 3), and a sound sample was recorded. In this grip, the microphone is held in such a way that the hand fully encloses the capsule circumferentially. This microphone holding position is commonly preferred in live events.

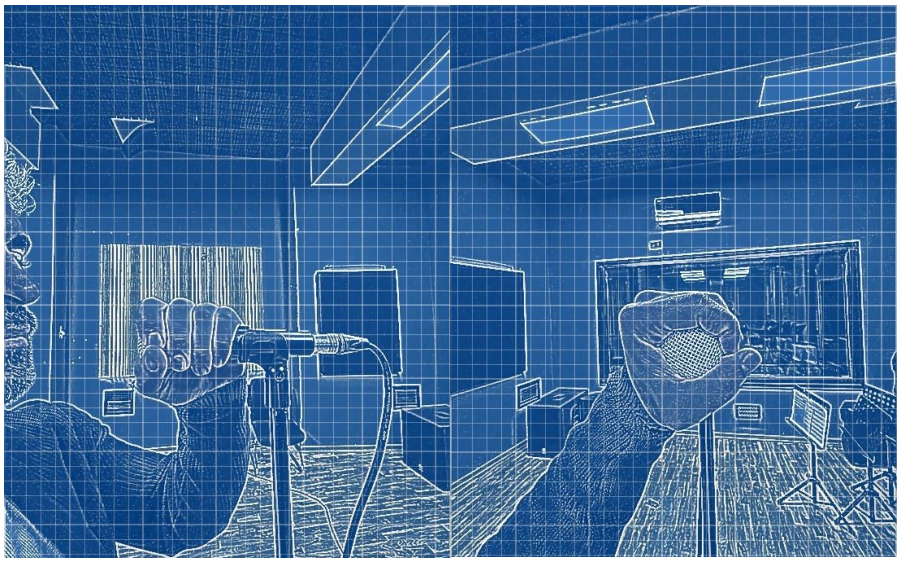

Figure 3. Fully enclosed capsule grip

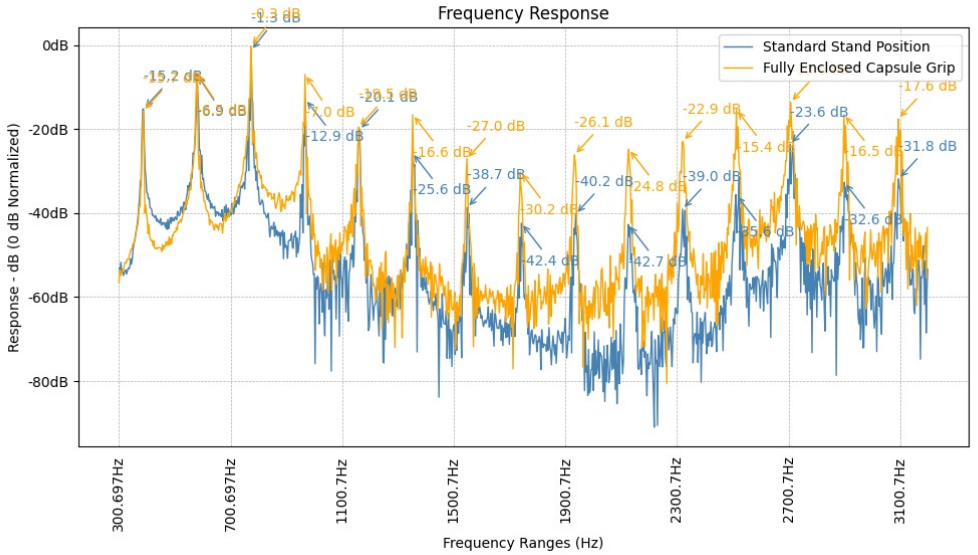

Figure 4. FFT fully enclosed capsule grip

Table 1. FFT first seven harmonics for fully enclosed capsule grip

	Harmonic 1	Harmonic 2	Harmonic 3	Harmonic 4	Harmonic 5	Harmonic 6	Harmonic 7
SSP	-15,16487	-6,944243	-1,272283	-12,8926	-20,14848	-25,61112	-38,65569
FECG	-15,6657	-6,54615	-0,324933	-6,972554	-19,51257	-16,56303	-27,00436
Diff(dB)	-0,500834	0,3980934	0,9473504	5,9200487	0,6359058	9,0480933	11,651323

SSP: Standard Stand Position **FECG:** Fully Enclosed Capsule Grip **Diff:** Difference

The data obtained from the fully enclosed capsule grip (figure 3), when analyzed against the standard stand position (figure 1) for the first seven harmonics, showed that as the frequency drew away from the fundamental frequency, the gains became significant enough to affect the structure and perceived quality of the sound. Notably, the dB differences observed in the 4th, 6th, and 7th harmonics are particularly striking.

Semi-Open Capsule Grip

In this holding position, the front part of the microphone capsule was left open while the surrounding area was enclosed by hand, and a sound sample was recorded. The vocalist held the microphone by enclosing the capsule's entire middle surrounding area using his hand. This microphone holding position is commonly preferred in live events. In this position, the hand fully encloses the capsule from the sides, which is also generally preferred for live performances.

Figure 5. Semi-open capsule grip

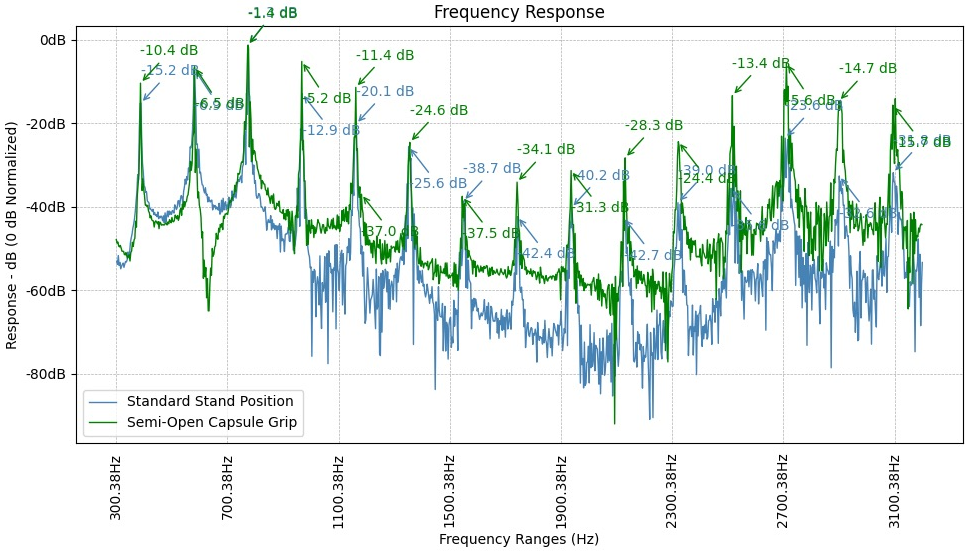

Figure 6. FFT semi-open capsule grip

Table 2. FFT first seven harmonics for semi-open capsule grip

	Harmonic 1	Harmonic 2	Harmonic 3	Harmonic 4	Harmonic 5	Harmonic 6	Harmonic 7
SSP	-15,16487	-6,944243	-1,272283	-12,8926	-20,14848	-25,61112	-38,65569
SOCP	-10,3974	-6,451023	-1,358821	-5,198873	-11,40483	-24,59267	-37,51785
Diff(dB)	4,7674667	0,49322	-0,086537	7,6937299	8,743649	1,0184485	1,1378417

SSP: Standard Stand Position **SOCP:** Semi-Open Capsule Grip **Diff:** Difference

The data obtained from the semi-open capsule grip (figure 5), when analyzed against the standard stand position (figure 1) for the first seven harmonics, showed that as the frequency deviated from the fundamental frequency, the gains became significant enough to affect the structure and perceived quality of the sound. Notably, the dB differences observed in the 1st, 4th, and 5th harmonics are particularly striking.

Body Grip

In this holding position, a sound sample was recorded by holding the microphone by its body, without any interference with the capsule area.

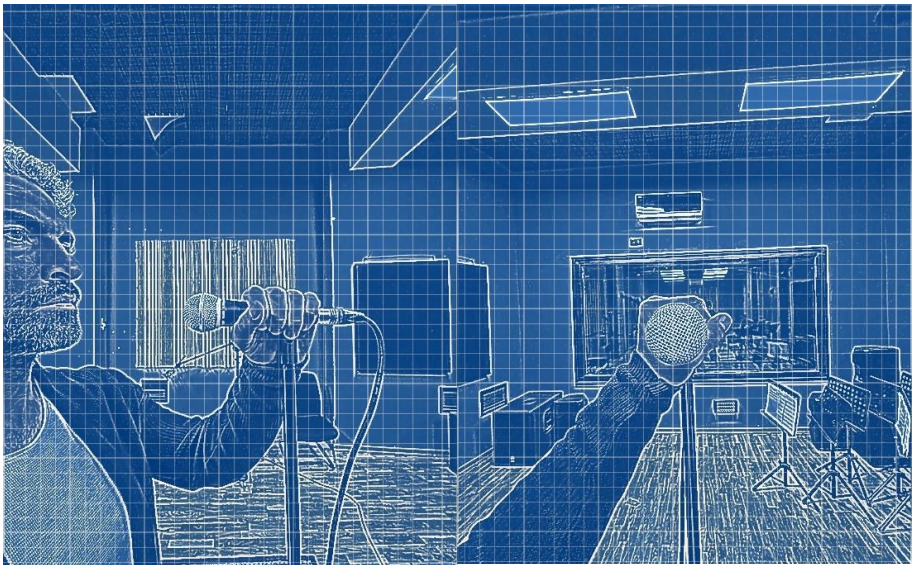

Figure 7. Body grip

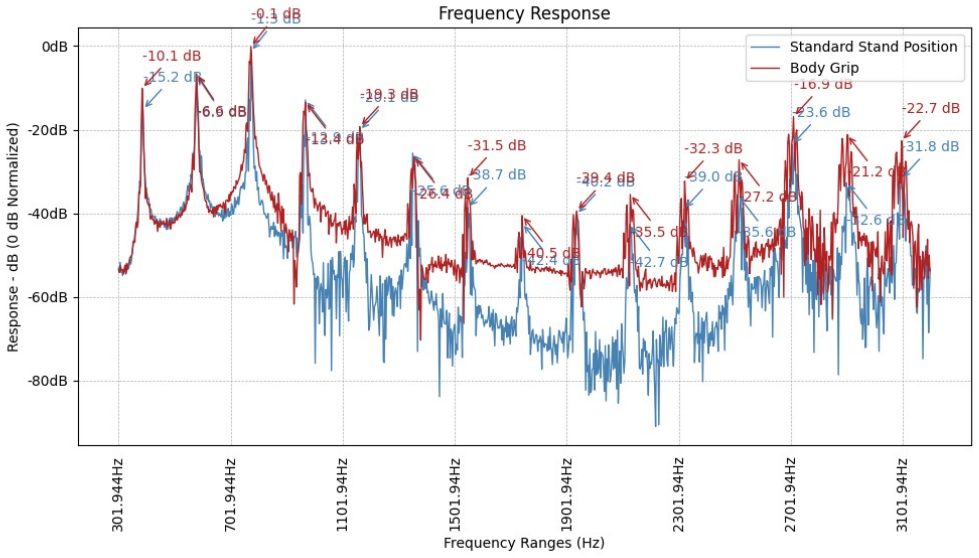

Figure 8. FFT body grip

Table 3. FFT first seven harmonics for body grip

	Harmonic 1	Harmonic 2	Harmonic 3	Harmonic 4	Harmonic 5	Harmonic 6	Harmonic 7
SSP	-15,16487	-6,944243	-1,272283	-12,8926	-20,14848	-25,61112	-38,65569
BG	-10,11211	-6,637057	-0,13028	-13,43508	-19,29768	-26,44805	-31,51292
Diff(dB)	5,0527572	0,3071863	1,1420035	-0,542473	0,8508009	-0,836928	7,1427638

SSP: Standard Stand Position **BG:** Body Grip **Diff:** Difference

The data obtained from the body grip (figure 7), when analyzed against the standard stand position (figure 1) for the first seven harmonics, showed that as the frequency deviated from the fundamental frequency, the gains became significant enough to affect the structure and perceived quality of the sound. Notably, the dB differences observed in the 1st and 7th harmonics are particularly striking.

To provide an overall assessment of all holding positions together, the data from each graph were superimposed for a comprehensive evaluation. The following graph displays all the holding positions used as samples in this study.

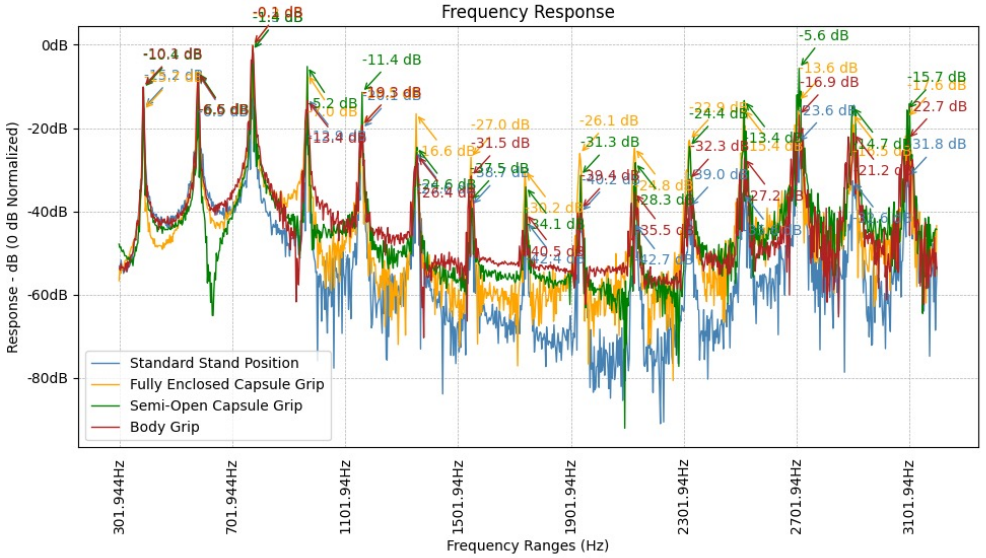

Table 9. FFT overall assessment of all holding positions

Table 4. FFT first seven harmonics for all holding positions

	Harmonic 1	Harmonic 2	Harmonic 3	Harmonic 4	Harmonic 5	Harmonic 6	Harmonic 7
SSP	-15,16487	-6,944243	-1,272283	-12,8926	-20,14848	-25,61112	-38,65569
FECG	-15,6657	-6,54615	-0,324933	-6,972554	-19,51257	-16,56303	-27,00436
SOCP	-10,3974	-6,451023	-1,358821	-5,198873	-11,40483	-24,59267	-37,51785
BG	-10,11211	-6,637057	-0,13028	-13,43508	-19,29768	-26,44805	-31,51292

SSP: Standard Stand Position **FECG:** Fully Enclosed Capsule Grip **SOCP:** Semi-Open Capsule Grip **BG:** Body Grip

As seen in Table 4, holding positions have significant effects on the frequency response of dynamic vocal microphones. This effect causes the analyzed sound waves to be transmitted to the microphone capsule in either a higher-pitched or lower-pitched form than normal. Therefore, if attention is not paid to the holding position while using dynamic vocal microphones, it may not be possible to achieve optimal performance from the microphone.

Discussion

This study examined the effects of microphone holding positions on frequency response and compared the findings with similar studies in the literature. The results show that each microphone placement can significantly impact both sound quality and frequency response.

Zhang, Zheng, and Mi (2024) investigated the effects of microphone placement on sound pressure levels and frequency, emphasizing that microphone positioning increases losses at low frequencies. This finding aligns with our observations that changes in microphone grip position cause distortion at low frequencies. Similarly, Gentner et al. (2024) demonstrated the negative effects of incorrect speaker placement and calibration on sound quality. Both studies confirm the significant impact of microphone grip position on overall sound quality and frequency response (Zhang et al., 2024; Gentner et al., 2024).

In their research on dramatic and lyrical singing in Western classical music, Echternach et al. (2024) emphasized the effects of microphone placement on sound pressure levels and resonant frequencies. Similarly, our study shows that microphone grip position causes comparable changes in resonant frequencies. Additionally, Ma (2023) highlighted how microphone placement affects the naturalness of recorded sound in the context of Beiguan opera. Both studies demonstrate the significant impact of microphone grip position on the characteristics of recorded sound (Echternach et al., 2024; Ma, 2023).

Awan and colleagues (2024) examined the effects of microphone placement on acoustic parameters such as cepstral analysis and harmonic-to-noise ratio, finding that microphone position significantly impacted these measurements. Müller et al. (2023) analyzed the relationship between speaker head orientation and microphone placement, noting that distortions in low frequencies were observed depending on the microphone's position. Finally, Parsa, Jamieson, and Pretty (2001) investigated significant differences in frequency response between various microphone types, and our study's findings align with these results (Awan et al., 2024; Müller et al., 2023; Parsa et al., 2001).

Conclusion and Recommendations

An examination of the data obtained from this study reveals that holding positions of dynamic vocal microphones result in significant changes in the microphone's frequency response. Depending on the position where the microphone's body and capsule sections are held, increases in certain frequency ranges and decreases in others were identified. For example, when using the standard stand position as a reference and analyzing the first seven harmonics, the other three positions exhibited gains that significantly affected the structure and perceived quality of the sound as the frequency deviated from the fundamental frequency. Notable dB differences were observed in the fully enclosed capsule grip for the 4th, 6th, and 7th harmonics; in the semi-open capsule grip for the 1st, 4th, and 5th harmonics; and in the body grip for the 1st and 7th harmonics.

Within the analyzed range of 392 Hz to 3136 Hz, differences in holding positions resulted in general variations compared to the standard stand position. Additionally, significant changes were observed in the 800–2300 Hz range, which is considered

crucial for human voice perception. These changes may cause the lower and upper frequency regions of the sound to be transmitted in different ways. Therefore, it is believed that proper microphone holding techniques have a substantial impact on how the user's voice is perceived. When the capsule is fully enclosed, the increase in low frequencies and the suppression of high frequencies become factors to consider in live performances and studio recordings. Just as the microphone's proximity to the sound source influences frequency balance, the way it is held also plays a critical role in determining the overall quality of the sound.

The effects of microphone holding positions on frequency response and overall sound quality should be considered in both stage performances and recording studios. Future studies can explore the impact of different microphone types and holding positions on sound in greater detail, providing further guidance on this topic. Professionals in sound engineering and the performing arts can use the findings of this research to optimize sound quality and minimize unwanted sound characteristics, achieving higher-quality results in both studio recordings and live performance settings. Additionally, a detailed examination of microphone holding positions can serve as a valuable resource for sound engineering education programs, enhancing the expertise of future sound engineers.

Recommendations for Researchers

The data obtained from this study suggests that new research can be conducted on different types of dynamic microphones used in live performances and studio recordings. The capsule diameter of the Shure SM-58 microphone used in our study is 25.4 mm (Web1). Different microphone models with this capsule size can be analyzed for their intended use, investigating how various capsule materials or production technologies provide different responses in the same environment.

Microphones are generally classified in the industry according to three different diaphragm sizes: small, medium and large. Small diaphragm microphones typically have a diameter of 5/8 inch (approximately 15-16 mm), while medium diaphragm microphones have a diameter between 5/8 inch and 3/4 inch (approximately 16-19 mm). Large diaphragm microphones have a diameter larger than 3/4 inch, usually around 25 mm or 1 inch (Web2). Researchers can classify microphones based on their diaphragm sizes and examine the different responses of microphones with similar structures but varying diaphragm sizes. Such a study could provide valuable insights into how diaphragm diameter and materials used impact microphone performance.

Recommendations for Practitioners

This study aims to guide sound engineers and live performance artists by offering more accurate vocal techniques for microphone usage. Additionally, it seeks to assist vocal performers by indicating the frequency responses obtained from different hand positions on the microphone, helping them determine the most suitable hand position for their needs. The data obtained from this study serves as a guide to selecting the correct microphone holding position in both recording studios and live performance stages, enabling higher quality and more professional results. In this context, it is recommended to use the information provided here to determine the proper holding position for improved sound quality and performance.

Limitations

This research is limited to the Shure SM-58 model, one of the most preferred dynamic vocal microphones for live performances. Additionally, to make the study more universally applicable, the sound range was restricted to the 4th octave (3136 Hz), and the G4 note at 392 Hz was chosen as the sample for data collection. During the recordings, four different hand positions

commonly encountered in live performances (standard stand position, fully enclosed capsule grip, semi-open capsule grip, and body grip) were selected. All hand positions were individually compared to the standard stand position, as it involves no manipulation. Only FFT analysis was used for processing and interpreting the data.

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Websites / Online Resources

Web 1. https://www.shure.com/en-US/docs/guide/SM58

Web 2. https://www.sinbosenaudio.com/info/what-are-the-dimensions-of-a-microphone-diaphragm-and-how-do-they-differ-sinbosen-i00093i1.html

Appendixes

Appendix 1. FFT Code

```
import matplotlib.pyplot as plt
import numpy as np
from scipy.io import wavfile
from numpy.fft import fft
import matplotlib.ticker as ticker
from scipy.interpolate import make_interp_spline
from scipy.signal import find_peaks
# Read the audio file
def read_wav_file(file_path):
    sample_rate, data = wavfile.read(file_path)
    return sample_rate, data
# Calculate and limit the frequency response
def calculate_frequency_response(sample_rate, data, start_frequency=300, frequency_
interval=200, max_frequency=3200):
    n = len(data)
    fft_result = fft(data)
    frequencies = np.fft.fftfreq(n, 1 / sample_rate)
    magnitude = np.abs(fft_result)
    mask = (frequencies >= start_frequency) & (frequencies <= max_frequency)
    filtered_frequencies = frequencies[mask]
    filtered_magnitude = 20 * np.log10(magnitude[mask])  # Convert to dB
    max_magnitude = max(filtered_magnitude)
    normalized_magnitude = filtered_magnitude - max_magnitude
    return filtered_frequencies, normalized_magnitude
# Plot frequency response and exclude peaks within certain frequency ranges
def plot_frequency_response_with_peaks(frequency, response, label, color, exclude_
ranges=None):
    smooth_frequency = np.linspace(min(frequency), max(frequency), 1000)
    spline = make_interp_spline(frequency, response, k=3)
    smooth_response = spline(smooth_frequency)
    line, = plt.plot(smooth_frequency, smooth_response, color=color, linewidth=1, label=label)
    peaks, _ = find_peaks(smooth_response, height=-43)
    peak_frequencies = smooth_frequency[peaks]
    peak_responses = smooth_response[peaks]
    if exclude_ranges:
        mask = np.ones(len(peak_frequencies), dtype=bool)
        for start, end in exclude_ranges:
            mask &= (peak_frequencies < start) | (peak_frequencies > end)
        peak_frequencies = peak_frequencies[mask]
```

```
        peak_responses = peak_responses[mask]
    for i, (peak_freq, peak_resp) in enumerate(zip(peak_frequencies, peak_responses)):
        offset = 20 if i % 2 == 0 else -30
        plt.annotate(f'{peak_resp:.1f} dB', xy=(peak_freq, peak_resp), xytext=(0, offset),
                     textcoords='offset points', color=color,
                     arrowprops=dict(arrowstyle='->', lw=1, color=color))
# Display frequency intervals at the bottom
def add_frequency_intervals(frequency):
    min_freq = min(frequency)
    max_freq = max(frequency)
    tick_values = np.arange(min_freq, max_freq + 200, 400)  # Every 400 Hz
    plt.xticks(tick_values, rotation=90)
    plt.gca().tick_params(axis='x', which='both', bottom=False)
    plt.xlabel('Frequency Ranges (Hz)')

# Main processing function - analyzes 4 audio files
def analyze_four_audio(files, colors, exclude_ranges=None):
    plt.figure(figsize=(10, 6))
    for i, (file_path, label) in enumerate(files):
        sample_rate, data = read_wav_file(file_path)
        frequency, response = calculate_frequency_response(sample_rate, data)
          plot_frequency_response_with_peaks(frequency, response, label, colors[i], exclude_
ranges=exclude_ranges)
   plt.gca().xaxis.set_major_formatter(ticker.FuncFormatter(lambda x, _: '{:g}Hz'.format(x)))
   plt.gca().yaxis.set_major_formatter(ticker.FuncFormatter(lambda x, _: '{:g}dB'.format(x)))
    plt.ylabel('Response - dB (0 dB Normalized)')
    plt.title('Frequency Response')
    plt.grid(True, which="both", ls="--", linewidth=0.5)
    plt.legend()
    add_frequency_intervals(frequency)
    plt.show()
# Specify file paths and labels for analyzing four audio files
audio_files = [
    ('0standart_standt_position.wav', 'Standard Stand Position'),
    #(1fully_enclosed_capsule_grip.wav', 'Fully Enclosed Capsule Grip'),
    #('2semi_open_capsule_grip.wav', 'Semi-Open Capsule Grip'),
    #('3body_grip.wav', 'Body Grip')]
# Define colors manually
colors = ['steelblue', 'orange', 'green', 'firebrick']
areas
analyze_four_audio(audio_files, colors, exclude_ranges=exclude_ranges)
```

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Research Article

The index of Nâyî Ali Dede's notebook as Rauf Yekta's reference source

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Abstract

In recent years, thanks to the state and private archives being opened to the public, a lot of new information has started to emerge. When sources are subjected to in-depth analyses, much existing information can be reinterpreted. The ITU Ottoman Turkish Music Research Group, which has worked on three archives to date, has brought a selection from Rauf Yekta Bey›s archive, which was inaccessible for 80 years, to interested readers through the book Rauf Yekta Bey'in Musiki Antikaları. The index numbered N-153/2, which is included in this book and written in Yekta Bey›s handwriting, is at the centre of our article. As a matter of fact, it is understood that this index was copied by Rauf Yekta Bey from a Hampartsum notebook believed to have been written by Nâyi Ali Dede, and that it was an important reference source for him. Based on its relations with other notebooks in the Yekta archive, the index also provides important clues about Nâyî Ali Dede›s notebook and helps to reveal new information about other sheet music collections. Some studies on the subject are sceptical about Nâyî Ali Dede›s authorship of the notebook due to his living dates and emphasise that he could only have been a collector. To examine Nâyî Ali Dede›s relationship with Hampartsum notation, the index was also compared with the notebooks believed to be Hampartsum autographs in terms of repertoire and notational practices. Before that, the notebooks believed to be Hampartsum autographs were examined, and it was discussed whether they could have been written by Hampartsum Limonciyan and various conclusions were drawn about the subject.

Keywords

indexes, Hampartsum notation, Mevlevi Music, Nayi Ali Dede, Rauf Yekta›s archive, manuscript

Introduction

In the second half of the 19th century, with the widespread use of Hampartsum and Western notation, many prominent members of society patronised the copyists (Tr. Notacı) of their time and ensured the notation of makâm music pieces. Thus, the first large-scale written collections began to be formed. Among these music patrons were state officials such as Ethem Paşa, Necip Paşa and Halim Paşa, and members of religious orders such as Baba Raşid Efendi and Aziz Dede, as well as figures such as Rauf Yekta Bey, Abdülkadir Töre and Hüseyin Sadettin Arel (Üngör 1966a, Üngör 1966b). Thanks to the curiosity and endeavours of such interested people, a significant part of the music of the period was recorded. It was not possible to make use of the collections in state institutions for many years because the sheets were not classified. For example, the collections of Halim Paşa and Dr. Hamit Hüsnü Bey at Istanbul Radio, and the collections of Levon Hancıyan, Bogos Hamamcıyan and İsmâîl Hakkı Bey at Ankara Radio were closed for many years, and then introduced to the relevant audience by a committee through the "TRT Külliyat" and "Geçmişin Ruh İzleri" projects, and were transferred to the Presidency's library of manuscripts and opened up by the decision of the

committee.[1] The Hüseyin Sadettin Arel collection was donated to Istanbul University Institute of Turkic Studies (Türkiyat Araştırmaları Enstitüsü) in 1956, and was made available after its classification was completed.[2]

Today, the opening up of both institutional and private archives has paved the way for the emergence of national and international projects. In 2009, the first major project was initiated by the Department of Ethnomusicology at the University of Würzburg. The aim of the project is to find original manuscripts written in different notations and to bring them together in a large repository. With the international Corpus Musicae Ottomanicae (CMO) project carried out by the Institute of Musicology at Münster University in Germany under the direction of Prof. Dr. Ralf Martin Jäger, manuscripts notated in both Hampartsum and Western notation found in Istanbul libraries have been obtained and digitised.[3]

Most of the late 19th and early 20th century written repertoires are still in private archives. Due to the scarcity of written sources, it was very important to initiate classification, identification and examination studies for private archives other than the sources in the libraries of institutions and organisations. With this very intention, the first study on the personal archive of the ûdî, composer Ali Rifat Çağatay (1867-1935), one of the most important figures representing the transition period in Turkish Music at the beginning of the 20th century, has also led to the creation of a group and a project with a similar mission. Thus, the Ottoman/Turkish Music Research Group (OTMAG), which aims to contribute to the field of musicology by examining private music collections which contain the primary sources of Turkish music and which have not been unearthed so far, was officially established in May 2014 under the coordination of Prof. Dr. Nilgün Doğrusöz within the Istanbul Technical University Turkish Music State Conservatory. So far, studies have been carried out on the collections of Rauf Yekta, Ali Rifat Çağatay and Dürrü Turan (1883-1961).[4] The entire archive in the possession of Alp Altıner, the grandson of Ali Rifat Çağatay, and with the consent of Cem Yektay, the grandson of Rauf Yekta Bey, selections from the Hampartsum notebooks in Rauf Yekta Bey's archive have been shared with the reader in the resulting book.[5] *Rauf Yekta Bey'in Musiki Antikaları* stands in a privileged place among these studies. These two special archives have also led to various new studies.

Aim of Research

Rauf Yekta Bey's library has a monolithic index (N-153/2) written in Rauf Yekta Bey's handwriting, and it reflects the imprint information of peşrevs and semâîs, which constitute a large number of pages.[6] It is understood that this index was based on a Hampartsum notebook belonging to Nâyî Ali Dede (d. ca. 1829). This ownership is indicated by Yekta Bey at the top of the first page of the index. It is also understood that Yekta Bey believed that this Hampartsum notebook, whereabouts of which are unknown, was written by Nâyî Ali Dede. On

[1] See Doğrusöz's foreword as advisor in Demirtaş (2022).

[2] The most recent classification and cataloguing work on the archive was carried out by Harun Korkmaz between 2013-2017. In addition, the sheet music part of the Şerif Muhiddin Targan collection, which was donated to Süleymaniye Library in 1974, was classified and made available in 2014. In contrast to these collections, which remained inaccessible for a long time, the Ekrem Karadeniz sheet music collection in Süleymaniye Library and the Laika Karabey sheet music collection in IBB Atatürk Library were made available for use within a short period of time after they were donated. (Demirtaş (with Doğrusöz), 2022, p. xxii).

[3] The aim of the project is to produce a reliable critical edition based on jointly determined parameters. For detailed information on editions, see https://www.uni-muenster.de/CMO-Edition/

[4] OTMAG has presented its research through many different platforms, such as books, panels, exhibitions, concerts and radio programmes. See Web 1.

[5] The Dürrü Turan-Münir Turan digital audio archive project has beaen completed. For details, see Kaya (2019). A book on Dürrü Turan is planned to be published in the near future.

[6] The first page of the notebook which contains the Hampartsum musical script gives the impression of a worksheet. The following pages contain the aforementioned index, but the first page is missing.

the other hand, the fact that Hampartsum notation was developed in 1812 by a group of Armenians[7] in Istanbul under the leadership of Hampartsum Limonciyan (1768-1839), and the fact that Nâyî Ali Dede died in 1829, make it necessary to be sceptical about this information. Indeed, Olley (2017, pp. 193-194) claims that there is no concrete evidence that this notation system was used in Muslim musical circles until Hampartsum Limonciyan's death (1839). Suphi Ezgi (1869-1962), in the fifth volume of his book published in 1953, states that three Hampartsum autographs, which he borrowed from Necip Paşa's (1815-1883) library through Zekâi Dede (1825-1897), bear the seal of Nâyî Ali Dede on the title pages. At this point, Olley, based on this seal indicating ownership, suggests that Nâyî Ali Dede may have been a collector, but that Mevlevî musicians did not widely use Hampartsum notation before 1839. On the other hand, it is a well-known fact that Mevlevî musicians also attached importance to the scientific aspect of music and even were pioneers ahead of society in this regard. Nâyî Osman Dede's (1652-1729) notation study, as well as the book studies of Abdülbaki Nasır Dede (1865-1821) and Nâyî Mustafa Kevserî (d. ca. 1770) are important examples in terms of showing the relationship established with music by the Mevlevî tradition.[8] Various stories of Hampartsum Limonciyan's visits to Mevlevî lodges [Mevlevîhânes] and his contact with Muslim musicians have also survived.[9] We attribute an important role to Nâyî Ali Dede, especially since he served as the head of *neyzen*s at Beşiktaş Mevlevîhânesi in his last years, and in terms of his possible contact with Hampartsum and his notation. The presence of various descriptions pointing to the Mevlevîhâne in the titles of some scores in the notebooks which are believed to be Hampartsum autographs further supports these stories.[10] However, no conclusive evidence has been found to establish this relationship so far, and perhaps the most concrete of these is the claim, based on the eyewitness testimony of Suphi Ezgi, that Hampartsum notebooks with the seal of Nâyî Ali Dede exist:

> Three of Hamparsum's six handwritten notebooks, which I acquired, were taken by my master M. Zekâi Efendi from the library of Necip Paşa, the Minister of

[7] Hampartsum described this in his will as follows: "I, 'Viraço [probably Diratzu] (Tr. Muganni, En. Chanter) Hampartsum' myself developed my method for the science of writing yerajiştağan (Tr. Musiki, En. Music) at the mansion of Düzyan family. However, it was rough [at that time]. We, three of us together, examined (the notation sytem): Agop Çelebi, with a keen knowledge of the Frankish note, my own knowledge of ipsalitik (ie. Greek music), and his uncle Andon Çelebi, with a good knowledge of Ottoman music" (Demirtaş, 2022, pp. xix-xx). For Yekta's translation in Ottoman (probably from the original with Armenian script) see Doğrusöz (2018), p. 182.

[8] For further details, see Yalçın (2017); Ekinci (2016); Yalçın (2019). For more information on the contributions of Mevlevî lodges to Turkish music, see also Demirtaş (2007).

[9] Başer (2014, pp. 6-7) points out that Kalfa Kirkor Balyan's (1764-1831) responsibility for the restoration of the Beşiktaş coastal palace (Çırağan area) which was located right next to the Beşiktaş Mevlevîhânesi, may have been the beginning of Hampartsum's relationship with the Mevlevîhâne. On the other hand, Olley (2020, p. 3) suggests that Hampartsum Limonciyan may have learned the tanbûr by attending a Mevlevîhâne, perhaps the one in Galata, close to Pera where the Düzyans and the majority of Catholic Armenians had residences. Başer argues that, contrary to popular belief, the neyzen (ney player) who opened the doors of Beşiktaş Mevlevîhâne to Hampartsum was not Hamâmîzâde İsmâîl Dede (1778-1846), but Neyzen Deli İsmâil Dede (1808-1860), a composer of instrumental music. This is because Hamâmîzâde İsmâîl Dede was in contact with the Yenikapı Mevlevîhânesi. She notes that the limited information about Deli İsmâîl Dede was transmitted verbally from the late Mevlevî şeyh [sheikh], musician and poet Ahmed Celâleddin Dede (1853-1946), citing Ergun's book (see Ergun (1942), p. 501). However, Olley (2017, p. 84, in footnote 55) is sceptical of this information because Deli İsmâil Dede was very young at the time. In addition to these thoughts of Başer, Nâyî Ali Dede served as the head of the neyzens of Galata, Kasımpaşa and Beşiktaş Mevlevîhânes in 1812 and continued this duty until his death (1829). "Neyzenbaşı şüden Derviş Ali Bey be-dergâh-ı Galata, Kasımpaşa ve Beşiktaş, sene 1227/1812 fi Zi'l-hicce. Derviş Ali Bey, Çalılı derviş Mehmet gibi ve derviş Emin gibi dergâh-ı selâseye neyzenbaşı olmuştur [Derviş Ali Bey, like Çalılı derviş Mehmet and derviş Emin, became the head neyzen of the dergâh-ı selâseye]." (Defter I: 71; Kaya & Küçük (2011), p. 191).

[10] t'ēggē sēmayı' in OA421, p. 67; 'muhayēr t'ēkgē sēmayi' in OA421, p. [76]; 'mavēra, dēvri kēbir mēvlahanēnin' in TA110, p. 04.

> Muzika-i Hümayun, and handed to me. Only peşrev and saz semâîs were written in these books. Three of the books had the seal of Nâyî Ali Dede on the title page, indicating that they were his property. One of these books was later acquired by Rauf Yekta Bey and was among his books. The other two were burnt in the house of Necip Paşa's son in the Vezneciler fire. In addition to these, Sadettin Arel has another notebook with the same writing; and there are two others in the library of the Istanbul Conservatory; one of them is small, side-opening, and is among the collection of Nâyî Baba Raşid; the other one was transferred to the library of the Istanbul Conservatory by Necmeddin Koca Reşid, one of the grandsons of Grand Vizier Koca Reşid Paşa, through the poet Yahya Kemal Beyatlı (with the statement that it was presented to the Grand Vizier by Hamparsum). The fact that the words of Mr Yahya Kemal and the writing in the six collections were identical proved that the writing in those notebooks was Hamparsum's. Hamparsum wrote only peşrevs and semâîs in these collections; we have not seen his notation for vocal music. (Ezgi, 1953, p. 530).

As can be understood from his statement quoted above, Ezgi states that the seal of Nâyî Ali Dede on the title pages of the three notebooks that he thinks were written by Hampartsum Limonciyan, only indicates ownership. He also states that two of these notebooks were destroyed in a fire, while the remaining one was later claimed by Rauf Yekta. In another statement on the subject, he mentions that the surviving notebook was kept by Kanuni Hacı Arif Bey (1862-1911) for a while before Rauf Yekta: "*One of the old Hamparsum notated manuscripts was first passed to Kanuni Hacı Arif Bey and from him to Rauf Yekta Bey, the other two were burned in a fire in his [Necmeddin Koca Reşid's] son's house*." (Ezgi, 1933, p. 4 in NATM/I).

Therefore, it is possible that the notebook to which the index (N-153/2) belongs and whose current whereabouts are unknown is one of the three books mentioned by Ezgi. Olley (2018, p. 365) comes to a different conclusion in his study, stating that the notebook Yekta acquired from the Necip Paşa collection is another Hampartsum notebook numbered B-4.[11] The fact that B-4 was owned by Kanuni Hacı Arif Bey for a while, according to the information provided by Yekta's grandchildren, seems to have led to such an inference.[12] However, B-4 does not bear the seal of Nâyî Ali Dede. N-153/2 is important at this point. The fact that Yekta thought that the notebook to which the index belonged was written in Nâyî Ali Dede's handwriting seems to be related to the possibility that the notebook bears his seal. However, Ezgi's statement that the notebook was written in Hampartsum's handwriting does not coincide with Yekta's assessment of N-153/2 as "written in Nâyî Ali Dede's handwriting". The main focus of our study is to examine this issue. For this purpose, the relationship of the index (N-153/2) with both the notebooks believed to be Hampartsum autographs and other notebooks in the Yekta archive will be revealed and inferences will be drawn. However, for this purpose, it will first be analysed whether these notebooks are indeed Hampartsum autographs.

Methodology

Based on the index of Nayi Ali Dede's notebook, an archival analysis was conducted in terms of content, affiliation, writing styles, physical condition and dates of the notebooks. This analysis attempts to establish an intertextual relationship between the manuscripts. The findings have been compared with both the historical record and recent studies, and as a result, the missing or inaccurate points have been reorganised in the light of new findings, or at least opened to discussion.

[11] Since the study by Doğrusöz (2018) had not yet been published at the time he wrote his article, Olley used different numbering and used the code 'RY-4'.

[12] Olley also concluded that the notebook was not written by Hampartsum because of the differences in both repertoire and handwriting.

Findings

The Notebooks Written by Hampartsum Limonciyan, as Mentioned by Suphi Ezgi

Before moving on to this topic, it is useful to take a closer look at Nâyî Ali Dede's seal. On the seal, which is in the shape of a dervish's hat (Tr. sikke)[13], there is the expression "Bende-i Hazret-i Mevlânâ Ser-Nâyî Ali Dede" written in ta'lîk script (see Figure 1).

١٢٣

Language: Turkish

Date [Hicri/Gregorian]: 1231 / 1816

Type of Seal: Personal

Shape of Seal: Dervish hat

Alphabet: Arabic script

Script Type: Ta'lîk

Physical Setting: Engraved

Ornamental Elements: Carnation, tulip

Data Template: Personal seal, Ser-Nâyî Ali Dede, "Bende-i Hazret-i Mevlânâ Ser-Nâyî Ali Dede", 1231

Figure 1. Information on the seal of Nâyî Ali Dede[14]

On the date found on the seal (1816), Nâyî Ali Dede was the head of *neyzen*s. The presence of the same seal on Nâyî Ali Dede's collections of sheet music by Kantemiroğlu and Kevserî indicates that he also owned these.[15] A drawing of this seal made by Rauf Yekta Bey can also be found in a Hampartsum notebook (N-176) containing Ayin-i Şerifs (Religious rituals of Mevlevîs).[16]

Apart from the three notebooks belonging to the Necip Paşa collection, Ezgi points to three other notebooks that he thinks were also written by Hampartsum, and it is understood that the notebook in the Arel archive is TA110[17] and the notebook in the Conservatory archive is NE203[18]. When both notebooks are examined, the significant similarities in terms of handwriting and repertoire give the impression that they were written by the same scribe. Olley (2020, p. 21), who prepared the critical edition of NE203, also argues that the possibility that both notebooks were written by Limonciyan is strong.[19] This supports Suphi Ezgi's statement in 1953. On the other hand, Ezgi mentioned another notebook, also in the

[13] A dervish hat symbolizes the tombstone and the death of the ego.

[14] See Web 2. It is understood that the image of the seal was taken from a book in the Mehmed Arif-Mehmed Murad section of the Süleymaniye Library. In the catalogue information entered by Tenzile Derin Şahal, Nâyî Ali Dede's date of death is incorrectly written as 1820. The probable reason for the error is that Öztuna's Encyclopedia (TMAS/I), instead of Defter-i Dervişan, was taken as a reference.

[15] A The fact that the seal was later affixed to the inside cover of the Kevseri Mecmuası caused Yalçın to be sceptical about whether Nâyî Ali Dede really kept this notebook in his library. See Yalçın (2019), p. 10.

[16] See Doğrusöz (2018), p. 101.

[17] RISM (Répertoire International des Sources Musicales): TR-Iütae 110.

[18] RISM: TR-Iüne 203-1.

[19] Based on the confession of Arshag Alboyadjian, Olley (2018, p. 364; 2020, p. 24) states that NE203 may have passed first to his son, Neyzen Zenop, and then to Hampartsum Çerçiyan, and that the notebook, which was previously in scattered folios, may have been gathered together and bound by one of these people (and even the page numbers may have been assigned by them). Olley (2020, pp. 30-31) also states that it is likely that the book passed into the hands of Suphi Ezgi in the 1920s or 1930s (based on the similarity between the Darülelhan scores and the versions in NE203), and that the Latin translations of the Armenian-letter Turkish titles may have been made by Ezgi, while the Arabic-script translations (he also states that these are not literal translations) may have been made by Arel. However, in the manuscript OA353 (TR-Iboa TRT. MD.d.353), as we will discuss in the next chapter, we noticed that there is a folio belonging to the same series as NE203, which does not contain any pagination, and that the titles are translated into Arabic script as in NE203. This suggests that the translations were not made by Ezgi or Arel, but by someone else at a much earlier date.

conservatory library but part of the Nâyî Baba Raşid collection. However, which notebook this is, still remains a mystery. General opinion on the subject is that the notebook referred to is NE211[20] due to its small size and the fact that it opens on the short side [landscape format]. In recent studies, this notebook has been identified as NE211 and the focus has been on whether it could have been written by Hampartsum. Indeed, NE211 differs from NE203 and TA110 by being written in Arabic script and by the formal characteristics of the notation it contains. It would be appropriate to be sceptical about the possibility that a name like Suphi Ezgi, who at a very young age copied a considerable portion of the three notebooks belonging to the Necip Paşa collection, which he acquired through his teacher Zekâi Efendi and which contained hundreds of scores, and who devoted a significant part of his life to the study of the compositions in the Hampartsum notebooks to which he had access, could be mistaken. On the other hand, there are no other notebooks in the library today that fit Ezgi's description and that have similar characteristics to NE203 and TA110. In addition to NE203, there are three other notebooks (NE206, NE209, NE210)[21] written in Armenian-letter Turkish, but they are not written in the early form of Hampartsum notation that Ezgi calls "unmarked" (işaretsiz), and they appear to have been written in the second half of the 19th century. Since there was no catalogue study conducted before 1987, it is not possible to make any inferences about the content of the conservatory archive in 1953 and the changes it underwent afterwards. The information obtained by Değirmenci (2023, p. 52)[22] through personal interviews about the history of this archive is as follows:

> Opened on January 10, 1917; Darü'l-Elhan was affiliated to Istanbul municipality [Şehremaneti] on January 22, 1927, and became the Conservatory. On February 5, 1944; it became the Istanbul Municipality Conservatory and finally in 1987 it was transferred to Istanbul University by the municipality. In the historical period between 1917 and 1987, it is known that the institution suffered many fires and was moved. In interviews with Gönül Paçacı and Ruhi Ayangil, who took part in the process of transferring the archive, it was learned that during the transfer of the Darülelhan Archive to Istanbul University, a classification and refinement [tasnif ve tafsiye] committee was established; the documents in the archive were counted by this committee and received with a report.

Therefore, the possibility that a notebook with similar characteristics to NE203 and TA110 was lost during the period between 1953 and 1987 should not be ruled out. Indeed, it is a sad fact that one notebook (NE212) was lost during the library's move in 2007.

NE203 and TA110 share not only handwriting and notation practices but also repertoire. Accordingly, ten pieces appear in both, and the versions are identical to each other. However, the striking point is the location of these scores in the notebooks. These are the ten pieces at the end of both notebooks (Cf. NE203, pp. 16/1 - 18/3 and TA110, pp. 73/1-78). Olley (2020, pp. 16-17) mentions that the series to which NE203 belongs was found in folios, and that NE203 may have been created by the later binding of some of these folios. Accordingly, a comparison of the order of these pieces in the notebooks suggests that it is more likely that the writing of TA110 was completed before the binding of NE203.

"OA405" as Another Hampartsum Autograph

Recent studies suggest that another notebook (OA405) in the Ottoman archive may also be a Hampartsum autograph, as it is similar to NE203 and TA110. The information note on

[20] RISM: TR-Iüne 211-9.
[21] RISMs (respectively): TR-Iüne 206-4, TR-Iüne 209-7, TR-Iüne 210-8.
[22] In footnote 26.

the inner cover of the notebook, which Tarık Kip (1927-2000) quotes as in the catalogue, states that this notebook belonged to Hampartsum's student, Bedros Ağa (1785-1840), and was given by him to Levon Hancıyan (1857-1947): "*Çömlekci Bedros Ağa (who was Hamparsum's student), gave this notebook as a gift to Leon Efendi. It contains 71 peşrevs and semâîs (from various makams). (This information is as written in the list. 02.03.1982 Tarık Kip)*" (OA405, p. [i]).[23]

This notebook is very similar to NE203 in terms of handwriting, notational practices, and repertoire. Many of the pieces in common are identical versions, which may indicate the existence of a copying practice between the two notebooks. Indeed, it is noticeable that even scribal errors were copied.[24] Even if this is not the case, there must have been a common notebook/collection that served as a source for both NE203 and OA405. NE203 and OA405, which contain 70 and 72 instrumental pieces respectively, have exactly 28 pieces in common.[25] Although it is difficult to say anything about the chronological hierarchy between the two, it can be argued that the writing of OA405, like that of TA110, began before the binding of NE203 was completed. Olley (2020, p. 16) also indicates that many pieces from NE203 were transferred to both TA110 and OA405, and explains the two main reasons for this conclusion as follows:

> There are two main reasons for believing that the pieces in OA405 and TA110 were transferred before the leaves were bound, and that they were copied from NE203 rather than vice versa. Firstly, pieces appear in a different sequence from the current order of NE203, but nonetheless reflect the order of pieces on individual folios (sometimes with those on the verso preceding those on the recto). Secondly, erroneous groups or passages that are struck out in NE203 do not appear in OA405 or TA110.

In fact, in another notebook (OA353) in the Ottoman archive, which contains mixed content, a folio belonging to the same series as NE203 was found (see Figure 2). On the verso and recto of this folio, there are scores of six more pieces: "Bahri nazik nēyzan başı ali bēyin", "hefdügâh dēvrikēbir kâ[t'ib]", "garçığar sēmayi kâ[t'ib]", "hefdügâh sēmayi kâ[t'ib]", "bēyat'i saat' pēşrēfi ḫıdır aġa usuli düyēk", "ēvci ara sult'an sēlim düyēk".

[23] Original note reads as follows: "Çömlekci Bedros Ağa -(ki Hamparsum'un talebesidir)- bu defteri Leon Efendi'ye hediye etmiştir. İçinde 71 adet peşrev ve semâî vardır (muhtelif makamattan). (Bu bilgi listede yazılı olan şekildir. 02.03.1982 Tarık Kip)".
[24] This manuscript is being edited by Dr. Semih Pelen as part of the CMO project.
[25] Different versions of a composition are not accepted as mutual pieces since this possibly does not reflect a copying practice.

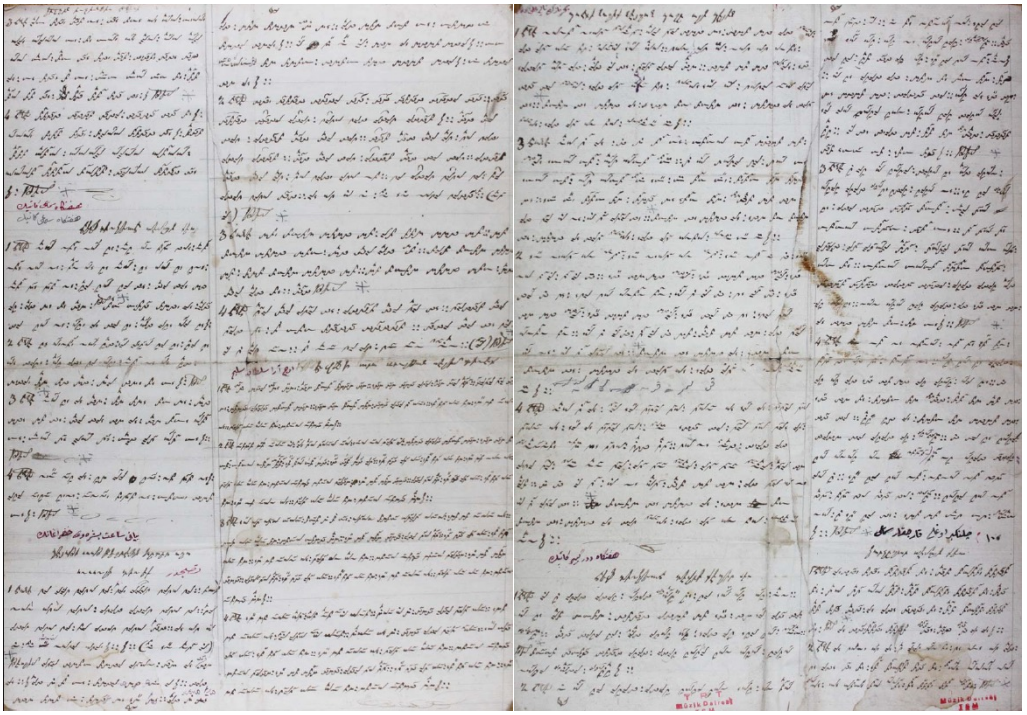


Figure 2. TR-Iboa TRT.MD.d.353, img. 198-199.

The fact that these six pieces appear in the same order in OA405 strengthens the argument that OA405 was copied from this folio collection. Accordingly, if we assume that these two were not written simultaneously, at least 34 pieces in OA405 were copied from this collection of loose sheets, including the folios of NE203. Although it is not possible to make a clear judgment, it seems likely that the remaining 38 pieces were also copied from the now lost collection of loose sheets. Olley (2020, p. 17) also notes that, assuming that the remaining parts of OA405 were also transferred from loose leaves, the gaps in this sequence would indicate that several (five or six, according to the approximate no. of pages required to copy a single folio from NE203) are now missing. Important evidence in support of this view can be found in another Hampartsum notebook (OA421) in the Ottoman archive, which will be discussed in the next chapter. Between TA110 and OA405, the mutuality in terms of repertoire is minimal, with only three pieces in common: "TA110, p. 50/3 - OA405, p. 48", "TA110, p. 77/2 - OA405, p. 74", "TA110, p. 78 - OA405, p. 75".[26] To summarize, we can say that care was taken to create a different repertoire for TA110 and OA405, that is, to avoid notating common pieces (see Figure 3).

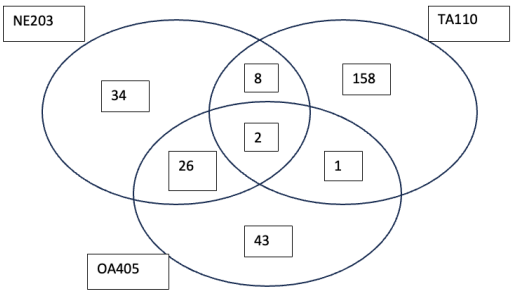


Figure 3. Scheme of Mutuality between Three Manuscripts on the Basis of Identical Pieces.

[26] When the mutual pieces were compared, only the very last part of the piece in the makâm "muhayyer sünbüle" (TA110, p. 50/3 - OA405, p. 48) was found to be slightly different between the two manuscripts, and it was assumed that these are the same versions of the piece.

A Lost Repertoire Notated by Hampartsum Limonciyan?

It is difficult to say what proportion of the total scores really notated by Hampartsum Limonciyan is represented by the repertoire in the three notebooks. However, another notebook in the archive (OA421)[27] contains important clues that may help to shed some light on the subject. This notebook, which contains 78 peşrevs and saz semâîs, is different from the other three notebooks in terms of both handwriting and repertoire. There are no pieces in common with the other notebooks. Three pieces (OA421, p. 44; OA421, p. 49; OA421, p. 63), although also included in the other notebooks, are slightly different versions.[28] In addition, the fact that some of the pieces in the notebook were notated together with the parts called "tertib" strengthens the argument that the notebook is distinct.[29]

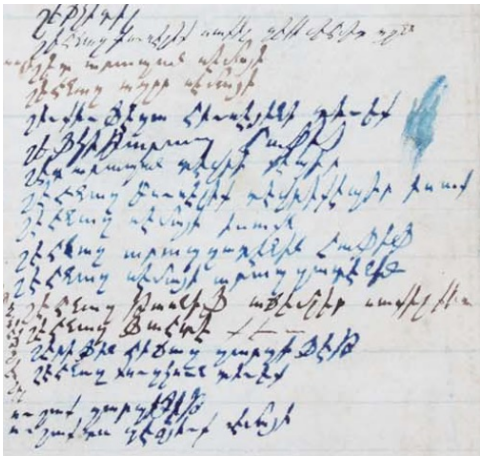


Figure 4. SExcerpt from the later added list of pieces in OA421.

[27] RISM: TR-Iboa TRT.MD.d.421.

[28] Cf. TA110, p. 44/2; NE203, p. 01/1 and B405, p. 38; TA110, p. 16/1.

[29] 'Tertib' means arranging, organising etc. Although there is no musical term with this name in the literature, when we analyse these sections in the notebook, we can say that they are the sections where modulations between makâms are made, compositional/performative skills are exhibited. These sections can be found in any hâne of a piece. In addition, the fact that Kantemiroğlu used this word while describing the transitions between makâms, supports the function of the word we mentioned "...hüsn-i tertib ile makâmları birbirine bend ü besde edib [...] bir nağme icad eyleye..." For further details see Avcı (2021).

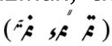
The first and last pages of the notebook contain a handwritten list, added later, of the titles of at least 356 peşrevs and saz semâîs, arranged alphabetically. We say "at least" because the alphabetically ordered list is missing, for example, groups beginning with the letters "ա, հ, լ, բ, ո, ղ, and յ [a, i, l, p, o, t, and y]".[30] Interestingly, this list appears to have been created collectively by different individuals over the same period. This is suggested by the fact that the different pens used in the list (blue, brown, black, and fine-tipped blue ink) have been used variously in the alphabetical groups, and that this seems to vary in parallel with the handwriting (see Figure 4).

Even more interesting is the fact that this list covers a large part of the repertoire included in TA110, NE203, OA405 and OA421. It includes 57 of the 72 compositions recorded in OA405, 133 of the 169 in TA110, 53 of the 70 in NE203, and 55 of the 78 in OA421.[31] However, as mentioned earlier, the titles of pieces beginning with certain letters in the alphabetical list are missing, or the page(s) on which they appear are not available in the digital copy we have. As a matter of fact, the titles of pieces in NE203, TA110, OA405 and OA421 that are not included in this list are mostly those that begin with those letters. It can therefore be assumed that the original list covers the vast majority of the pieces notated in these notebooks. It is also worth noting that the later additions made with ink pens next to the titles of the scores in the original content of OA421 are in line with the hands and ink colours involved in the creation of this list.

The titles in the list overlap to a great extent with the titles of the pieces notated in

[30] The omission could also be due to a page not present in the digital copy, unless the scribes left it unfinished or the page was somehow separated from the notebook.

[31] There are 169 titles in TA110, but since one composition is not notated, it would be more accurate to say that 168 pieces are actually notated. However, since this study mainly makes a comparison based on the indexes (titles of the pieces) and in order to show the commonalities, it is assumed that there are 169 compositions in TA110.

three of the four aforementioned notebooks (NE203, OA405, TA110). In fact, in the titles of two pieces in TA110, Arabic letters are used in addition to Armenian Turkish, and the titles of these pieces are quoted verbatim in the list in OA421.[32] If different ink colours indicate different hands, it can be argued that at least three different people contributed to this list. Perhaps some kind of repertoire study was carried out by Limonciyan's students. Indeed, a note at "OA421, p. 72", probably written by the hand using the black ink pen, reads as follows: "*In the teacher's notebook, in the last part of the suzinak, there is also the following division*  [*suzinakın sōn hanēsindē hōcanın dēfdērindē bu parça dē vardır* ]". The piece to which this note seems to refer is the composition titled 'suzinak [later addition: ēminin dēvri kēbir]' recorded at "OA421, p. 15".[33] The last pitch of the piece is a kaba hicâz, which is not quite right for the makâm sûznâk, and this is probably the reason for the annotation at the end of the notebook.

There are other important implications of this list. Olley (2020, p. 16), in his edition of NE203, found that different inks were also used in NE203. Olley (2020, p. 15) suggests that there is a correlation between the ruling of the page and the ink colour, but he thinks that this is because the folios were notated by the same person at different times. On the other hand, Olley notes that the scores on all folios notated in brown ink in NE203 (2 folios) and the scores on one folio notated in black ink are also present in OA405, suggesting a correlation. According to our findings, an interesting picture emerges when this list of pieces in OA421 is juxtaposed with NE203. The inks of the scores notated in NE203 match the inks of the corresponding titles in this list (See Table 1). For example, in the folio (NE203, pp. 5-6), which is generally notated in blue ink, brown ink is used on only one piece (NE203, p. 6/3), while the corresponding piece title in the list in OA421 features also brown ink. Therefore, based on the possibility that this list was created by multiple people - even though the handwritings in the notation are very similar - it is possible to conclude that the pieces in different inks were notated by different people. This is further supported by the fact that when we look at the identical pieces between the three notebooks, we see that very obvious scribal errors, such as the omission of divisional marks, were also copied. If these notebooks had been written by Limonciyan, it would be expected that these errors would not be repeated in the copied notebook. However, in spite of all these data, the possibility that the list was compiled by a single person cannot be ruled out with certainty. In this case, the different colours would perhaps be due to the fact that this person (possibly Hampartsum Limonciyan) used different pens at different times and/or in different places.

[32] TA110, p. 20/1: գիւրտիւ սէմայի اغر [kürdü sēmayi aġır]; TA110, p. 68/1: րաստ սէմայի روﺩ كل [rasd sēmayi devr-i gül]). Cf. OA421, p. [77] and OA421, p. [i].

[33] The composition in the usûl devr-i kebîr to which this note refers is available at "OA421, p. 15" but not in the other three notebooks. Our research has revealed that a version containing this division is notated in a book in the church of Surp Takavor (ST1, p. 103). ST1, as noted by Olley (see Olley 2020, p. 41), is closely related to NE203 (and the loose sheet collection to which it belongs).

Table 1. Ink comparison between NE203 and the later-added list of pieces in OA421

The ink of notation in NE203	The List of Pieces given on the first and last Pages of OA421	
	Location	Titles Written in Colours
NE203, pp. 1/1–2/4 [brown]	OA421, p. [76]	sırf pusēlig zarbifēt‘
	OA421, p. [76]	sult‘ani arak dēvrikēbir
	OA421, p. [76]	sēmayi sult‘ani arak
	OA421, p. [i]	ēsgi acēm aşıran dēvri kēbir
	--	acem aşıran sēmayi isak‘n
	OA421, p. [i]	ēvic zarbifēt‘
	OA421, p. [i]	ēvic sēmayi
NE203, pp. 3/1–4/4 [black]	OA421, p. [ii]	üşak bērēvşan
	OA421, p. [i]	ırasd mēnēkşēzar düyek
	OA421, p. [76]	sırf acem sēmayi
	OA421, p. [ii]	üzal dēmir lēblēbi zarbifēt‘
	OA421, p. [76]	şēhnaz fahdē kâ
	OA421, p. [76]	nışabur sōlak zadēnin sakil
	OA421, p. [76]	nışabu[r] sēmayi
	OA421, p. [76]	sēgâhdē zülfinigâr düyek
NE203, pp. 5/1–6/2 [blue]	OA421, p. [76]	şēhnaz arabzadēnin hafif
	OA421, p. [76]	şēhnaz sēmayi arabzadēnin
	OA421, p. [ii]	hisar zarbifēt
	OA421, p. [ii]	hisar sēmayi
	OA421, p. [76]	muḫalif arak bērēvşan
	OA421, p. [76]	muḫalif arak sēmayi
NE203, p. 6/3 [brown]	OA421, p. [76]	suzidil sēmayi
NE203, p. 7/1–7/5 [blue]	OA421, p. [76]	sümbülē sēmayi
	OA421, p. [76]	sēgâh sēmayi kâtibin
	OA421, p. [77]	çargâh bērēvşan
	OA421, p. [i]	ēvic mayē zēncir
	OA421, p. [i]	ēvic mayē sēmayi

It also becomes clear that NE203 is only a small part of a sheet collection (at least 404 pieces in total) which includes a large number of the pieces in the other three notebooks, and at least 130 additional pieces for which there are no notations in these notebooks.[34] The fact that these sheets were used as sources for TA110 and OA405 suggests that another lost notebook(s) containing at least 130 pieces may have existed in history.

The relationship of OA421 with other notebooks is not limited to this. As mentioned by Dimitriou and Pelen (2023, p. 40), the scribe's note at the end of a peşrev in the makâm hicâzkâr and in the usûl berefşân at "TA110, p. 37", indicating that a version of the piece in a new style is found in another notebook, may refer to the notated version of the same piece in the usûl muhammes at "OA421, p. 28".[35] Indeed, under the title of the score in OA421, a later hand wrote in pencil "t'at'arın bērēvşanı". If the "other notebook" referred to by the scribe of TA110 is OA421, it is more plausible that the writing of the latter was completed before TA110.

Suphi Ezgi's information on the history of NE203 is the basis for the suggestion that these notebooks were written by Limonciyan.[36] In addition, Olley (2020, p. 21) explained in his edition that he finds it plausible that the letters 'h' in the titles of the compositions are an abbreviation of 'Hampartsum'. As a matter of fact, this letter 'h' is given together with the abbreviation 'kâ' in the titles of some pieces and Olley interpreted this as 'kâtip Hampartsumun'. It is true that 'kâ' is an abbreviation of 'Kâtib', which was also clearly written by the scribe in some pieces. But what the 'h' signifies is not very clear. There are also examples where this letter was written following the notation rather than in the heading. Indeed, it may also be an abbreviation of 'hoca' as mentioned at OA421, p. 72. A small detail that may lend credibility to this is found in a notebook in the Rauf Yekta archive. The piece titled 'Acem Zirgüle, Hafif, Hoca'nın', ranked 81st in the index of manuscript A-90, which was apparently notated by Mandoli Artin, is recorded as 'Acēm zergülē hafif, h' in the loose sheet collection.[37] Although the identity of the person referred to as Hoca is again ambiguous, it appears that his name may have been 'Ali' from the piece titled "Nutk-ı Hümayûn, Devr-i Kebîr, Ali Hoca" in the same manuscript (A-90). Interestingly, there is an 'h' at the end of the score of this piece at OA405, p. 46. However, there is no such correlation between the remaining pieces in the A-90 and the manuscripts believed to be Hampartsum autographs. Even if the letter 'h' refers to 'hoca', we believe that it is more likely that this does not refer to the hoca as a composer. Rather, the letter 'h' may indicate that the piece was taken from the hoca's notebook or that it indicates a version which was learnt from the hoca (teacher) through meşk. As Jäger

[34] The 55 compositions, which are notated in OA421 and included in the list at the end of this manuscript, are assumed to be different versions of the ones in the collection of at least 404 compositions to which NE203 belongs. As a matter of fact, there are some points that suggest that the aforementioned collection of loose sheets, most of which are now lost/whereabouts unknown, was not the source of OA421. The first of these is that the three shared pieces, which (as we have already mentioned) are also found in the other notebooks, show some differences from those found in this notebook. The second is that the 55 compositions in OA421 mentioned above differ from those in the loose-sheet collection in terms of their titles.

[35] The note reads as: "ōbir tʿefdērdē dē bu peşrēf var lakʿin ō ȳėni tʿavurdur [this peşrev is also available in the other notebook, however that one is in the new style]". For detailed information on the different versions of this composition found in both notebooks, see Dimitriou & Pelen (2023), pp. 40-41.

[36] In this notebook, 64 pieces of peşrev and semai are written. It has been stated by B. Necmeddin, the grandson of Koca Reşid Pasha, that the handwriting in the notebooks we obtained from Necib Pasha is the same, and that this notebook was also given to Koca Reşid Pasha by Hamparsum. Therefore, we have accepted that this notebook was written by Hamparsum. 9/2/1941 Z. Suphi Ezgi (NE203, p. 18)'. See Also Olley (2020), pp. 25-26.

[37] We are thankful to Marco Dimitriou for drawing our attention to the possibility that this manuscript may have been written by Artin of Mandoli.

pointed out in 1996 (p. 267), Hampartsum Limonciyan may have met and studied music with Nâyî Ali Dede and even learned Kantemiroğlu notation.[38] As a matter of fact, at OA405, pp. 43-6, there are 'h' letters following the scores of two pieces titled "Dü şēms rasd. u" düýēkʿ farahinin" and "rasd şedü düýēkʿ ēflatʿun", the composers of which are known.[39] We understand that what this letter signifies was also ambiguous for generations immediately following Limonciyan (and perhaps even for his students). For example, pieces attributed to 'kâtib' in the loose sheet collection, usually are not attributed to Limonciyan in other Hampartsum notebooks dated to the mid-19th century. Despite all these uncertainties, since we believe that the vast majority of this collection reflects Limonciyan's notated repertoire, we occasionally use the term 'Hampartsum Autograph' for practical reasons, in this article.

The Index of Nâyî Ali Dede's Notebook and its Relationship with Other Hampartsum Notebooks in the Rauf Yekta Archive

In the index (N-153/2) that Rauf Yekta extracted from a Hampartsum notebook that he believed was written by Nâyî Ali Dede, we see that there are 258 instrumental pieces (peşrev and saz semâîsi) in total (see Figure 5).[40]

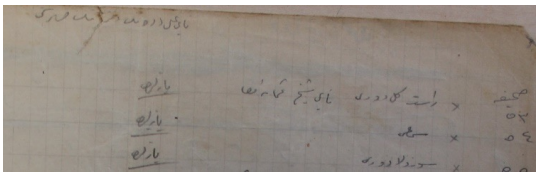


Figure 5. Excerpt from the N153/2.

[38] The fact that many of the distinctive descriptors such as Benefşezar, Elmas Pare, Mevci Derya, Gül Devri, Zülfinigar, Eğlence, Naz ü Niyaz, Şükufeza[r], Çaki Giriban etc. found in the titles of compositions in both the Nâyî Osman Dede and the Kantemiroğlu sheet music collections are also present in the notebooks thought to be Hampartsum autographs suggests that these collections may have been accessible to Hampartsum Limonciyan at some point.

[39] Transcriptions of the Arm.Trk. text were based on the guideline prepared by Dr. Cihan Ulupınar.

[40] We would like to thank Hulusi Özbay for his great help with the translation of the index.

However, since the first page of it is missing, the index only provides us with the information about the pieces starting from page 53 in Nâyî Ali Dede's lost notebook.[41]

Yekta Bey made some notes next to the titles of the pieces in the index. It is understood from these notes that Yekta Bey saw and analysed the scores in this notebook. For example, next to the title "Ḥümāyūn Semāʿī", the score of which is stated to be on page 69, he wrote "Is it the same as on page 295? No." indicating that he examined these scores one by one. When we analyse the expressions such as "written", "written verbatim", and "it is referred to the one written for Ata Efendi" next to some of the titles in the index, alongside the Hampartsum notebooks in the Rauf Yekta archive, we understand that Yekta Bey transferred these pieces to different notebooks (N-139, B-7, G-31, N-176, N-153/1)[42] or compared them with the versions in these or other notebooks and may have even made additions to these versions based on those in Ali Dede's notebook:

- The piece titled "Uşşak, Düyek, Kanpos" at "N-139, no. 20" was annotated by Yekta Bey as "The differences are from Nâyî Ali Dede's notebook [Farkları Ser Nâyî Ali Dede'nin defterinden]"[43] The N-153/2 shows that this piece is found on page 164 of Nâyî Ali Dede's notebook. Next to the title of the piece in the index, Yekta Bey has written the note "duplicated [mükerrer]". Thus, we understand that the score was rewritten in a location earlier than page 53 in Ali Dede's notebook.

- The piece titled "Karcığar, [Aksak] Semâî, Nâyî Ali Dede'nin" at "N-139, no. 53", was annotated by Yekta Bey as "Written from Nâyî Dede's notebook which is in his own handwriting. It is the semâî he composed for the ancient Karcığar Peşrevi in usûl Fahte [Nâyî Dede'nin

[41] See Doğrusöz (2018), p. 181.

[42] Ibid, vii.

[43] Ibid, 96.

kendi hatt-ı destiyle olan defterinden yazıldı. Fahte usûlündeki kadim Karcığar Peşrevi'ne yazdığı semâîdir".[44] It is understood from N-153/2 that this piece was found on page 177 in Nâyî Ali Dede's notebook. Next to the title of the piece in the index, Yekta Bey wrote the note "written [yazıldı]".

➢ On the piece titled "Semâî: Acemaşîrân" at "B-7, no. 6", Yekta Bey wrote: "Differences are from Nâyî Ali Dede's notebook. According to that book, it belongs to Tanbûrî Emin [Farklar, Nâyî Ali Dede'nin defterindendir. O deftere nazaran Tanbûrî Emin'in imiş]".[45] As a matter of fact, it is understood from the N-153/2 that this piece is on page 285 of Nâyî Ali Dede's notebook, and the title in the index states that it was composed by Tanburi Emin. In addition, Yekta Bey also notes, "Referred to the one written for Ata Efendi [Ata Efendi'ye yazılana işaret]".

➢ The piece titled "Peşrev: Bûselik, Devr-i Kebîr" at "B-7, no. 53" is annotated by Yekta Bey as "The differences are from page 112 in Nâyî Ali Dede's notebook [Farklar Nâyî Ali Dede'nin defterinden sahife 112]".[46] As stated by Yekta Bey, it coincides with the information in N-153/2, and it is understood that the piece is found on page 112 in Nâyî Ali Dede's notebook. In addition, there is a note added by Yekta Bey in the index as follows: "Referred to the Buselikler notebook written for Atâ Efendi [Atâ Efendi'ye yazılan Buselikler defterine işâret olundu]".

➢ The piece titled "Muhayyer, Darb-ı Fetih" at "B-7, no. 56" was annotated by Yekta Bey as "from Nâyî Ali Dede's notebook".[47] It is understood from the index that this piece is found on page 256 of Nâyî Ali Dede's notebook. Next to the title of the piece in the index, Yekta Bey added the note "written verbatim [aynen yazıldı]".

➢ The piece titled "Sûzidilârâ, Sultân Selim, Düyek Peşrev" at "B-7, no. 57" was annotated by Yekta as "from Nâyî Ali Dede's notebook [Nâyî Ali Dede'nin defterindendir]".[48] It is understood from the index that this piece is on page 296 in Nâyî Ali Dede's notebook. Next to the title of the piece in the index, Yekta Bey added the note "written [yazıldı]".

➢ The piece titled "Sûzidilârâ Semâî" at "B-7, no. 58" was annotated by Yekta Bey as "from Ali Dede's notebook [Ali Dede'nin defterindendir]".[49] It is understood from the index that this piece is found on page 297 in Nâyî Ali Dede's notebook. Yekta Bey added the note "written [yazıldı]" next to the title of the piece in the index.

➢ The piece titled "Büzürg Peşrevi, Galiba Muhammes?, Nâyî Şeyh Osman Efendi" at "B-7, no. 59" was annotated by Yekta Bey as "from Ali Dede's notebook [iAli Dede'nin defterinden]".[50] From the index, it is understood that this piece is found on page 421 in Nâyî Ali Dede's notebook, and Yekta annotated "written" next to the title in the index. The usûl of the piece is not specified in the index, but Yekta guessed "muhammes" in B-7.

➢ The piece titled "Semâî: Kûçek, Nâyî Osman Şeyh Efendi" at "B-7, no. 60" was annotated by Yekta Bey as "from Nâyî Ali Dede's notebook [Nâyî Ali Dede'nin defterindendir]".[51] It is understood from the index that this piece is found on page 352 in Nâyî Ali Dede's notebook. Yekta Bey added the note "written [yazıldı]" next to the title in the index.

➢ The piece titled "Dügâh Peşrev, Devr-i Kebîr, by Emîr-i Baghdâd" at "G-31, no. 7" was annotated by Yekta Bey as

[44] Ibid, 97.
[45] Ibid, 119.
[46] Ibid, 120.
[47] Ibid.
[48] Ibid.
[49] Ibid.
[50] Ibid.
[51] Ibid.

"Differences are from Ser-nâyî Ali Dede's notebook [Farkları Ser-nâyî Ali Dede'nin defterinden]".[52] It is understood from the index that this piece is found on page 117 in Nâyî Ali Dede's notebook. Yekta Bey added the note "written [yazıldı]" next to the title in the index.

➢ The piece titled "Dügâh Semâî, Mir-i Bağdâd'ın" at "G-31, no. 8", was annotated by Yekta Bey as "Differences from Nâyî Ali Dede's notebook [Farkları Nâyî Ali Dede'nin defterinden]".[53] It is understood from the index that this piece is found on page 119 in Nâyî Ali Dede's notebook. Yekta Bey added the note "written [yazıldı]" next to the title in the index.

➢ The piece titled "Gülizâr Peşrev, Berefşan, Nâyî Şeyh Osman Dede Efendi'nin" at "G-31, no. 45", was annotated by Yekta Bey as "Its differences are from the page 368 in Ser-nâyî Ali Dede's notebook [Farkları Ser-nâyî Ali Dede'nin defterinden 368. sahifede]".[54] As a matter of fact, as stated, it is understood from the N-153/2 that this piece is found on page 368 in Nâyî Ali Dede's notebook. Yekta Bey linked it to "G-31" by the annotation "Refer to the large notebook with tuğra [sultan's signature] [Tuğralı büyük deftere işâret]." next to the title in the index.

➢ The piece titled "Pûselikaşîrân, Lenk Fahte" at "N-153/1, no. 19", was annotated by Yekta Bey as follows: "However, in Nâyî Ali Dede's notebook it is called Hüseynîaşîrân [Halbuki Nâyî Ali Dede'nin defterinde buna Hüseynîaşîrân denilmiş]".[55] It is understood from the index that this piece is found on page 213 in Nâyî Ali Dede's notebook. Next to the title in the index, Yekta Bey added the note "Written into Buselikaşiran [...]) [Yazıldı (Buselikaşirana […])]".

➢ The piece titled "Semâî: Pûselikaşîrân" at "N-153/1, no. 20", was annotated by Yekta Bey as "In Nâyî Ali Dede's notebook it is called Hüseynîaşîrân [Nâyî Ali Dede'nin [defterinde buna] Hüseynîaşîrân denilmiş]".[56] The index shows that this piece is found on page 215 in Nâyî Ali Dede's notebook. Yekta Bey added the note "written [yazıldı]" next to the title in the index.

➢ The piece titled "Segâh, Karabatak, Sakîl, Hızır Ağa's" at "N-153/1, no. 34", was annotated by Yekta Bey as "The differences in certain places are the other style of this peşrev, which is also in Nâyî Ali Dede's notebook on page 423 [Bazı yerlerdeki farklar yine Nâyî Ali Dede'nin defterinde 423. sahifede muharrer olan bu peşrevin tavrı diğeridir.]"[57] As a matter of fact, it is understood from the index that this piece is found on page 423 in Nâyî Ali Dede's notebook as stated. Next to the title in the index, Yekta Bey noted "the same as the one on page 307 [307. sahifedeki ile aynı]" and the piece stated to be on this page is again "Segâh Karabatak". Yekta Bey also added the note "written [yazıldı]" next to the title.

➢ The piece titled "Semâî: Sabâ" at "N-153/1, no. 94" was annotated by Yekta Bey as follows: "Since it was written after the peşrev 'Nâz u Niyâz' in Ali Dede's notebook, and since Nâz u Niyâz was composed by Nâyî Şeyh Osman Efendi, it is possible that this semâî is by to the aforementioned composer [Ali Dede'nin defterinde "Nâz u Niyâz" peşrevinden sonra yazıldığına ve Nâz u Niyâz'ın da Nâyî Şeyh Osman Efendi'nin olduğu muharrer bulunmasına nazaran bu semâî'nin de müşarünileyhin [adı geçenin] olması maznundur]".[58]

[52] Ibid, 123.
[53] Ibid.
[54] Ibid.
[55] Ibid, 141.
[56] Ibid.
[57] Ibid.
[58] This statement shows that the composer attributions in N-153/2 were not made by Yekta and that they are the original attributions in Nâyî Ali Dede's notebook, because there is no composer attribution for this composition in the index. See Doğrusöz (2018), p. 142.

- "The piece titled "Semâî: Hüseynî" was annotated by Yekta Bey as "Semâî is written after his peşrev in Nâyî Ali Dede's notebook, so it is possible that he composed it [Semâî, Nâyî Ali Dede'nin defterinde kendisinin peşrevinden sonra yazılmasına bakılır ise kendisinin olması maznundur]".[59] The piece probably appears earlier than page 53 in Nâyî Ali Dede's notebook, since the title does not appear in N-153/2.

- "The piece titled "Bülbül Uşşâkı" at "N-176, no. 3" is annotated by Yekta Bey as follows: "Differences are from Ser-nâyî Ali Dede's notebook (The peşrev to be performed following the completion of the Āyîn-i şerîf) [Farkları Ser-nâyî Ali Dede'nin defterinden (Âyîn-i şerîfin hîtâmını müteâkib terennüm olunacak peşrev)]".[60] The piece probably appears earlier than page 53 in Nâyî Ali Dede's notebook, since the title does not appear in N-153/2.

When we look at the notebooks (N-139, B-7, G-31, N-153/1) containing the scores from Nâyî Ali Dede's notebook that seem to have been utilised, based on Yekta's "written" and "written verbatim" notes, one point draws our attention. Of these notebooks, N-139 and B-7 are written in late Hampartsum notation (HNER)[61], while G-31 is written in Western staff notation. Accordingly, the question arises as to whether the pieces in the notebook that Yekta thinks belong to Nâyî Ali Dede were also notated in the late Hampartsum notation. A clue that can give an answer to this question is found again in N-153/2. In fact, Rauf Yekta has added next to the titles of two pieces ("Nihāvend Semāʿī" and "Şevḳ u ṭarab Devrī") the initial notation of these pieces as they probably appear in Nâyî Ali Dede's notebook. As can be seen below, they are written in early form of Hampartsum notation (HNIR)[62] (See Figure 6).

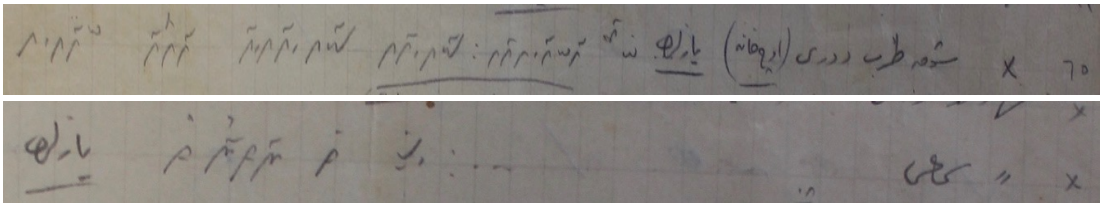


Figure 6. Initial notes of two pieces in Hampartsum Notation, from N-153/2

Of the 258 titles in the index, 144 of them contain the expression "written [yazıldı]" or "written verbatim [aynen yazıldı]". This suggests that there may have been other notebooks in which Yekta made the aforementioned comparisons and additions. Another noteworthy expression in Yekta's additions to the index is the phrase "referred to the one written for Ata Efendi". "Ata Efendi" refers to Ataullah Efendi (1842-1910), a Mevlevî sheikh who was Yekta's teacher.[63] A Hampartsum notebook (TA107) which we know to have belonged to the Ataullah Efendi collection is today in the Arel archive at Türkiyat Araştırma Enstitüsü.[64] It is possible to establish a relationship between this notebook and some of the compositions classified and copied by Arel and Ezgi from different notebooks/collections and labelled with the stamp "A" [TA249 (A)] (Ataullah

[59] Ibid.

[60] This note indicates which peşrevs and terennüms should be performed during the performance of the Mevlevî ritual, thus revealing the musical practice of the ritual. See Doğrusöz (2018), p. 100.

[61] Hampartsum Notation in Explicit Rhythm.

[62] Hampartsum Notation in Implicit Rhythm.

[63] See Öztuna (2006), p. 127 in TMAS/I.

[64] Considering that it is notated in an early form of Hampartsum notation (HNIR) and the living dates of the composers of the pieces it contains, it is reasonable to think that this notebook was written in the 1850s. The fact that it begins with Mevlevî ayins makes it highly likely that it was written by a Mevlevî musician. See also Olley (2018) for further details about TA107

Efendi collection).[65] However, there are more pieces in "TA249 (A)" than in TA107. While there are 199 peşrev and saz semâîs in total in TA107, "TA249 (A)" contains 257 pieces. In addition, "TA249 (A)" does not contain all the pieces in TA107, but only some of them.[66] Accordingly, there must have been other notebooks in the Ataullah Efendi collection, and Olley (2018, pp. 376-377) mentions the existence of at least two other notebooks. He gives one of these as IS1 in the Centre for Islamic Studies [İslam Araştırmaları Merkezi] and suggests that one or more other notebooks in the Rauf Yekta archive, written by Mandoli Artin (b. ca. 1890), may have been owned by Ataullah Efendi. An examination of the annotations attributed to Ataullah Efendi in N-153/2 reveals that Yekta refers to at least three different notebooks: 1) The notebook written for Atâ Efendi [Atâ Efendi'ye yazılan], 2) The book of Buselikler written for Atâ Efendi [Atâ Efendi'ye yazılan Buselikler defteri], 3) The notebook without semâi written for Atâ Efendi [Atâ Efendi'ye yazılan semâisiz defter]." No notebooks with the mentioned characteristics – at least two different notebooks containing only compositions in the makâm Buselik and only peşrevs – have been found either in the archive of the Islamic Research Centre or in the Rauf Yekta archive. Therefore, it is unclear whether the relevant notebooks were written by Mandoli Artin. On the other hand, there are three notebooks (A-90, B-5 and B-9) written by Mandoli Artin in the Yekta archive, but it is not possible to say that they were written for Ataullah Efendi, both because they are not related to the annotations in the index (N-153/2) and because two of them (B-5 and B-9) contain a repertoire of vocal pieces.[67]

Comparison of the Index of Nâyî Ali Dede's Notebook with Hampartsum Autographs

The only accessible information for us on the characteristics of the notation in the lost notebook allegedly belonging to Nâyî Ali Dede is one or two measures of the notation for two pieces, supplied by Yekta on N-153/2. At this point, one thing that can be done is to compare the present notation with Hampartsum notebooks that are thought to be Hampartsum autographs or that are closely related to these autographs in terms of both chronological and notational conventions.

Figure 7. Comparison of initial notes of two pieces found in N-153/2 with NE203 and OA405

[65] Accordingly, the books and collections to which the five different stamps correspond are as follows: A: Ataullah Efendi collection, B: Büyük [Big] Notebook, H: Hampartsum's notebook, N: Necip Paşa Collection, S: Salih Dede's Notebook. Harun Korkmaz wrote the following for the Hampartsum collection in the Arel archive: "It consists of pieces notated by indicating from which collections they were copied. In this collection, there are mainly instrumental scores from Hamparsum's notebook, Necip Paşa, Atâullah Efendi and Sâlih Dede's notebooks, and a small number of sheets from vocal repertoire are also found." (Korkmaz 2018:338).

[66] Olley (2018, p. 376) gives this ratio as 40%.

[67] See Doğrusöz (2018), pp. 102-105, 111-116, 117-118.

These two pieces appear to be present in the list in OA421, and thus in the collection of loose sheets to which NE203 belongs. The sheet music for the piece titled "Şevḳ u ṭarab Devrī (three hânes)" is found in NE203, while the sheet music for "Nihāvend Semāʿī'" is found in OA405 (see Figure 7).

As can be seen in Figure 7, the notation of both pieces allegedly found in Nâyî Ali Dede's notebook are not exactly the same as those in the notebooks thought to be Hampartsum autographs. When we compare the repertoire, the result is different. Most of the 258 pieces (at least 203 of them) in Nâyî Ali Dede's notebook (in N-153/2) are available in the large collection to which NE203 belongs.[68] It is worth mentioning again that the reason we say "at least" is that the alphabetical list in book OA421, which helps us to understand the content of this collection, does not include titles beginning with certain letters for some reason. There is an interesting statistic about the 55 pieces in N-153/2 that are not included in this list. Of these works, 28 have a composer attribution and 16 of them are Nâyî Ali Dede (See Table 2).

Table 2. Pieces not included in the Hampartsum Autographs but included in N-153/2 with composer attributions

Beyati Semâî	**Nâyî Ali Dede**	Acemaşiran Semâî	Tanburi Emin
Pençgâh devri	Kantemiroglu	Zirgüle	Kanpos
Buselikaşiran	Kemani Ali Ağa	Yegâh	Tanburi İsak
Evc Semâî	**Nâyî Ali Dede**	Acem Aşiran Semâî	**Nâyî Ali Dede**
Tahir devr	**Nâyî Ali Dede**	Gülizar	Nâyî Şeyh Osman Efendi
Bestenigar Semâî	**Nâyî Ali Dede**	Gülizar Semâî	**Nâyî Ali Dede**
[…] Nevâ	**Nâyî Ali Dede**	Nikriz Nadide	**Nâyî Ali Dede**
Acem Buselik	**Nâyî Ali Dede**	Isfahan Semâî	**Nâyî Ali Dede**
Acem Buselik Semâî	**Nâyî Ali Dede**	Horasan	**Nâyî Ali Dede**
Rahatülervah	**Nâyî Ali Dede**	Beyatiaraban Semâî	Tatar
Rahatülervah Semâî	**Nâyî Ali Dede**	Beyati Semâî	**Nâyî Ali Dede**
Beyati Semâî	Çengî Yusuf Dede	Neva darb-ı fetih	Solakzade
Uşşak Semâî	Nâyî Şeyh Osman Efendi	Rahatülervah düyek	**Nâyî Ali Dede**
Şevk-i Cedid	Musahib Numan Ağa	Gerdaniye evsat	Tatar

[68] Although it was not possible to compare the scores, a comparison was made based on makâm/usâl/composer information and it was assumed that those that matched were the same composition.

On the other hand, 26 of the 203 pieces common to both repertoires are not attributed to any composer in the loose sheet collection containing NE203, whereas they have composer attributions in N-153/2. Among these, Nâyî Ali Dede again comes first with 11 compositions (See Table 3). Accordingly, the relationship of the N-153/2 with Nâyî Ali Dede, as Yekta also believes, becomes clear. However, based on the notational comparison we made at the beginning of this section, we think that the versions of the pieces recorded in Nâyî Ali Dede's notebook are different from those recorded in the loose-sheet collection. In this case, although it is yet unknown by whom the aforementioned notebook was written, the possibility that the scribe was Nâyî Ali Dede cannot be excluded. However the notebook mentioned by Ezgi, which was transferred to Yekta from the Necip Paşa's library, is probably not this notebook since Ezgi claims it to be a Hampartsum autograph.

Table 3. Common pieces with no attribution in the Hampartsum Autographs but with composer attribution in N-153/2

Rast Gül Devri	Nâyî Şeyh Osman Efendi	Arazbar Semâî	**Nâyî Ali Dede**
Nihavend Devri	Kantemiroğlu	Arazbar Semâî	Tanburi Emin
Çargâh devr	Nâyî Şeyh Osman Efendi	Dügah Buselik [düyek]	**Nâyî Ali Dede**
Segâh Kabak devri	Nâyî Şeyh Osman Efendi	Dügah Buselik Semâî	**Nâyî Ali Dede**
Sultaniırak devr-i kebir	Kantemiroğlu	Muhayyer Zirgüle Semâî	**Nâyî Ali Dede**
Uzzal Semâî	**Nâyî Ali Dede**	Rast Semâî	Nâyî Şeyh Osman Efendi
Zilkeşhaveran [düyek]	Kemani Ali Ağa	Segâh Semâî	Saatçi Dede
Hicaz […] devir	**Nâyî Ali Dede**	Muhalif Irak [Berefşan]	Tatar
Hicaz Semâî	**Nâyî Ali Dede**	Nikriz Semâî	**Nâyî Ali Dede**
Neva Semâî	**Nâyî Ali Dede**	Horasan Semâî	**Nâyî Ali Dede**
Nühüft Semâî	Itri	Rast Semâî	Mü'min Ağa
Bestenigar Semâî	Arabzade Ali Dede	Şehnaz Semâî	Musi
Baytar Saba Semâî	Tanburi İsak	Zilkeşhaveran fahte	**Nâyî Ali Dede**

It should be noted that this conclusion is, of course, plausible on the assumption that the loose-sheet collection to which NE203 belongs reflects the versions notated by Limonciyan. In this case, it is possible that the notebook Ezgi refers to is B-4, as Olley suggests, even though it does not have the seal of Nâyî Ali Dede on the first page. Indeed, many pieces that are understood to be found in the loose-sheet collection but not notated in notebooks such as OA405 and TA110 are found in B-4.[69] Although the fact that B-4 is written in Arabic script, its handwriting and notational

[68] For example: "Hüseynî hezârdinar muhammes (no. 144 in B-4; OA421, p. [ii])"; "Hüseynî kâinat hafîf (no. 143 in B-4; OA421, p. [ii])"; "Sırf acem hapap sakîli (no. 158 in B-4; OA421, p. [76]"; "Hicâz turna sakîli (no. 110 in B-4; OA421, p. [ii])" etc.

conventions are very similar to those in NE203, OA405 and TA110. The notation of the two pieces ("Segâh Fahte" and "Eski Isvahan Remel") recorded on pages 342 and 343 of B-4, of which we have photographs, are identical versions with those in the other three notebooks and the vast majority of the compositions in B-4 are also available in these Hampartsum autographs. Moreover, the repetition mark used in the notation is the letter 'ւ' ('g'), the initial letter of the Armenian word 'կրկնիւն' (eng. 'repeat'), as in most Armenian-inscribed manuscripts. Considering that many Armenians in Istanbul during the Ottoman period could also write in Arabic script, it would not be correct to claim with certainty that this manuscript was not written by Hampartsum Limonciyan. In this case, B-4 could be a notebook prepared by Limoncian for a Muslim musician.

Conclusion and Recommendations

Among the pioneers of the use of musical notation in Ottoman society, Mevlevî musicians occupy an important place. Nâyî Osman Dede and Mustafa Kevserî are among the best known of these. It seems likely that Nâyî Ali Dede also developed an interest in recording of peşrevs and saz semâîs, as he kept books in his archive which were written by Osman Dede and Kevserî at the beginning of the 18th century. It is possible that Nâyî Ali Dede, like his predecessors, was interested in writing music. Feldman (2022, p. 7) notes that Mevlevî musicians had shown an interest in notation since the illustrious Nâyî Osman Dede (1652–1730) in the early eighteenth century, but that notation had not been considered appropriate for the Mevlevî music; rather, it was considered the province of secular art music. He states that with the generation following Aziz Dede this prohibition was becoming more relaxed. Although Feldman supports this conclusion with an anecdote about Aziz Dede's (1835-1905) negative attitude towards learning notation, new findings suggest that Mevlevî ayins started being notated from an earlier date. In this context, TA107, which was part of the Ataullah Efendi collection, has an important place. Written in early Hampartsum notation, probably by a Mevlevî musician in the 1850s, TA107 contains instrumental parts of 12 Mevlevî ayins, together with terennüms, within its first 82 pages. In addition, it should be kept in mind that peşrev and semâîs are part of the Mevlevî ayins, even though they are considered secular. To give just one small example, in a Hampartsum notebook (N-176) in the Rauf Yekta archive containing the scores of Mevlevî ayins, a peşrev in the makâm Hüzzam and in the usûl Fahte, which is known to have been written by a composer known as Tatar, is annotated as "A peşrev to be performed following the completion of the ayîn-i şerif [Âyîn-i şerîfin hitâmını müteâkib terennüm olunacak peşrev]".

It is known that Hampartsum notation rapidly became widespread. During the learning and teaching of Western staff notation, Hampartsum notation became the basis for the musicians of the Mızıka-yı Humâyûn. In other words, Western staff notation could be taught thanks to the Hampartsum notation.[70] Ayangil summarizes this as follows:

> Starting from the nineteenth century onwards, the portion of the music corpus dating back to earlier times, starting with the works of Kutb-ı Nâyî Osman Dede until Zekâî Dede and beyond, was recorded in the widely used Hamparsum notation; in the new world that emerged with the abolition of the Mehterhâne-i Hâkânî and the formation of the Muzika-i Hümâyûn, musicians came to understand Western notation as a result of Donizetti Paşa's explanations and comparisons with Hamparsum notation; in other words, they learned Western notation with the help of Hamparsum notation. (Ayangil, 2021, p. 9).

Nâyî Ali Dede's successors, such as Celâleddîn Dede (1849-1907) and Neyzen

[70] See Jäger (2023) for further information on the musical-cultural translation between Hampartsum Notation, Western Staff Notation and the Ottoman Pitch System.

Emîn Efendi (1883-1945), continued to write down pieces in Hampartsum notation. Emîn Efendi recorded 44 Mevlevî ayins with this notation.[71] In conclusion, Hampartsum notation found a legitimate place for itself in the Mevlevîhâne. Hampartsum's children performing on the ney instrument is another important trace of this cultural exchange.[72] It is also known that Rauf Yekta, the last sheikh of the Yenikapı Mevlevîhâne, continued his relations with Armenian musicians. As Ergur and Doğrusöz (2015, p. 160) suggest, this situation can be considered to be an inner reformism and need:

> Given that the musical sphere was not a small field, most of the musicians had close relationships and exchanges, therefore these attitudes were connected. Especially inner reformism can be considered as a motivated strategy of adaptation among traditional music circles. Although changes in style and techniques were relatively invisible components of the modernization, notation, on the contrary, constituted the most visible side and the most sensitive point on which conflicts were crystallized.

The unearthing of materials hidden in archives leads to new studies of the history of Turkish music. The proliferation of projects based on archives makes it possible to establish connections between material found in different archives. In this way, small details can provide new information as well as change what we know to be true. In our study, the information that NE203 is part of a larger collection of loose sheets has been supported by new findings, and the fact that this collection may not have been written by a single person (Hampartsum Limonciyan), but by multiple scribes – probably students of Limonciyan - is being shared with the reader for the first time. An index in a notebook in the Ottoman archive (OA421), which we believe reflects Hampartsum's notated repertoire and which led us to this conclusion, was compared with the index (N-153/2) of another Hampartsum notebook, to which Yekta Bey attributed great importance and which he believes was written by Nâyî Ali Dede. In this way, the notebook's possible relationship with Nâyî Ali Dede was uncovered, and new interpretations could be made about Nâyî Ali Dede's musical exchange with Hampartsum Limonciyan. Accordingly, the possibility that the notebook to which N-153/2 belongs could have been written by Nâyî Ali Dede, has been reopened for discussion as a possible scenario. Also, we concluded that the notebook that Suphi Ezgi identified as a Hampartsum autograph, which was passed from Necip Paşa's library to Rauf Yekta, was not the aforementioned notebook of Nâyî Ali Dede, based on the idea that the pieces it contains would match the versions in the Hampartsum autographs. This notebook that Ezgi claims to have been written by Limoncyian is probably B-4, as Olley concludes, but the possibility that it was written by Hampartsum Limonciyan is again up for debate. It is obvious how important archives are in shedding light on points that remain in the dark. Future researchers should meticulously analyse the archive data and contribute to the history of music by formulating new opinions. In this regard, we hope that future studies will provide new findings and change what we know, even if only slightly.

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[71] In addition to these, another Mevlevî musician, Mustafa Cazim Efendi (fl. 1900), notated Mevlevî ayins in Western staff notation. See Soylu (2020) for further details.

[72] See Başer (2014), pp. 12-13; Olley, 2017, pp. 84-85.

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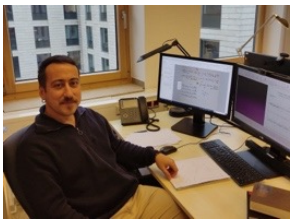

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Research Article

Interprtative Lens of Segovia's classical guitar transcription on Bach's Chaconne from Partita No.2 in D Minor Bwv 1004

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Abstract

The Bach's Chaconne partita no.2 in d minor BWV 1004 is a monumental classic of the Western Canon. Defining the transcription of the Bach's Chaconne from the original violin version to a classical guitar transcription depends mostly on reconciling Bach›s musical integrity with the artistic possibilities and constraints of the guitar. However, the process of music transcription is not limited to the mere transfer of notation from one instrument to another; it also encompasses the artistic, technical, and expressive contexts that surround the composition. This study examines how Segovia's transcription techniques on Bach's Chaconne BWV 1004 enhance the polyphonic texture, enrich harmonic development, and allow for expressive interpretation, all while navigating the constraints of the guitar. By comparing and contrasting Segovia›s version with the original violin piece, the research explores how these techniques contribute to the overall complexity and texture of the transcription. The findings suggest that Segovia's transcription not only preserves the essence of Bach's composition but also expands the repertoire available for classical guitar, offering insights into the creative process of transcription. This analysis provides a deeper understanding of how Bach's music can be faithfully performed across different instruments, supporting the notion that the core of Bach›s compositions transcends the specific instrument, thus guiding arrangers and musicians in producing transcriptions that honour the original work.

Keywords

Bach's Chaconne, Classical Guitar, Partita no.2 in d minor BWV 1004, Segovia's transcription

Introduction

Transcribing works from one instrument to another often presents challenges related to authenticity. Although, this method has the ability to improve the capabilities of particular instruments and highlight the strengths of a composition. Nevertheless, the process of music transcription is not limited to the mere transfer of notation from one instrument to another; it also encompasses the artistic, technical, and expressive contexts that surround the composition (Cellier & Rothwell, 1925; Davies, 1988).

Transcriptions and arrangements are an essential part of the classical guitar repertoire (Clark, 2009; Harb, 2014; Miller, 2012; Turnbull, 2006; Tyler, 1980; Yates, 1998). The classical guitar has long been overshadowed by the more prominent

orchestral and keyboard instruments within the Western classical music tradition (Djahwasi et al., 2023). Nevertheless, the guitar had a significant increase in popularity and acknowledgement during the twentieth century. This was due to the rise of highly skilled performers and the broadening of its range of music pieces (Coelho, 2003; Djahwasi et al., 2020).

According to Brew (2018), the Baroque, Classical, and Romantic periods produced little serious concert music on classical guitar. As a result, it's no surprise that guitarists seek transcription and arrangement to expand their repertory. It's legitimate to claim that Tarrega was the first guitarist to transcribe Bach's music (following the Bach renaissance that started with Mendelssohn and continued through the Romantic period after decades of nearly total oblivion), it is interesting to notice the choices of pieces: Tarrega transcribed two *Bourrees* from the cello suites (one of which was incorrectly named *Loure*), the fugue from the first violin sonata (BWV 1001), and the choir of the Crucifixes from the B minor mass. He also wrote a study on the *Gigue* BWV 825 (Clark, 2009; Stringer, 2021). It is undeniable that Tarrega has a very large contribution to the development of classical guitar repertoires. Even the Tarrega's transcriptions is technically comfortable, with illuminating the counterpoint and clarifying the intended harmony. However, without the excessive addition of chord tones, melodic lines, ornamentations, embellishments, or imitative voice lines, making his transcriptions is simply re-notating the originals, rather than developing it by adding new dimensions.

An eminent contribution of transcription works to the classical guitar repertoire is the Chaconne from Bach's Partita No. 2 in D minor, BWV 1004. Andres Segovia is the first figure to transcribe Bach's Chaconne BWV 1004 in D minor in classical guitar. This composition gained renown when it was skillfully adapted for the guitar by the renowned musician Andrés Segovia (Achondo, 2020). According to Wade (1983, 2010), Segovia's transcription of the Chaconne BWV 1004 in D minor premiered June 4th, 1935 in Paris. The Guitar Review number 4, published in 1947, commented on the international interest received by his transcription and performance of Johann Sebastian Bach's Chaconne. The article was headed "Concerning the Chaconne of Johann Sebastian Bach."

Defining the transcription of the Chaconne from the original violin version to a classical guitar transcription depends mostly on reconciling Bach's musical integrity with the artistic possibilities and constraints of the guitar. Two points define the case. Bach's goal in writing the Violin Sonatas and Partitas—including the Chaconne—was not to highlight the violinist's technical ability but rather his compositional ability. This suggests that other instruments—not only the violin— can be conveyed through various instruments. The second is linked timeless and expressive nature; Betancourt (1999) states that the Chaconne's timeless compositional quality and great emotional depth make it fit for transcription to other instruments. This point of view supports the idea that the expressive ability of the Chaconne can be kept throughout several instrumental interpretations.

According to Duarte (1983) a good arrangement is "one that 'works', sounding as though the music might have been written for the receiving instrument, and, hopefully, with that instrument adding some new dimension. Segovia's method of transcribing and interpreting Bach's music changed how guitarists viewed Baroque music. His attention on phrasing, dynamics, and articulation set the standard for interpreting Bach's compositions on the guitar, combining the traditions of violin and guitar performance. The ultimate result is a composition that combines Bach's buildings with a romantic aesthetic and an unexpectedly idiomatic adaptation. This

transcription also represented an evolution in Bach's connection with the guitar (Fierens, 2019). In addition, Andrés Segovia's transcription of "Bach's Chaconne" is a response to the limitations of the classical guitar's restricted repertoire (Moolman, 2010). This raises a crucial question: Does this transcription works have a prominent status in the classical guitar repertoire only due to its exceptional composition, or does Segovia's transcription contribute significantly in illuminating the artistic qualities of the classical guitar?

Bach's solo music is characterized by its highly melodic nature. The manipulation of monodic lines, moments of homophony, and instances of polyphony achieved through the violin's multiple-stop technique offer intriguing insights into the underlying logic of these musical events (Munoz, 2022). Yates (1998) discusses some of the processes of transformation that he used to develop good and idiomatic transcriptions of Bach's Cello suites. Particularly, he discusses the need of adding notes to achieve one of the following results: 1) Adding notes to the lower voices in order to have a consistent bass line, 2) dividing long notes to compensate for the longer sustain achieved with the bow, and 3) adding imitative motion to enrich the texture. However, the broader implications of these techniques on the polyphonic and harmonic capabilities of the guitar have not been extensively studied. There is a research gap in exploring how these techniques contribute to the overall texture and complexity of the transcription, particularly in how they allow the guitar to present multiple voices or lines simultaneously. This is especially relevant when comparing the guitar's ability to enrich the harmonic texture to the original instrument's limitations. In addition, there is a need of study in exploring how these techniques contribute to the overall texture and complexity of the transcription, particularly in how they allow the guitar to present multiple voices or lines simultaneously. This is especially relevant when comparing the guitar's ability to enrich the harmonic texture to the original instrument's limitations.

The objective of this study is to analyze and evaluate Segovia's transcription by comparing and contrasting it with the original Violin piece, with a focus on examining the polyphonic capabilities, harmonic development, and expressive interpretation present in Segovia's version. Examining this argument could assist one better understand transcription creative process and how his music might be faithfully performed for many instruments. It can show whether Bach's compositions' core is really independent of the instrument, therefore aiding arrangers and musicians in producing transcriptions respecting the original work. In conclusion, investigating these arguments is essential for advancing our knowledge of musical transcription and preserving the artistic and emotional integrity of classical compositions.

Historical Aspects

Partita II in D minor BWV 1004 by Johann Sebastian Bach (1685-1750) is usually known as part of the '*1720 Autograph*,' which consisting of Violin Sonatas and Partitas BWV 1001-1006. The terminology '*1720 Autograph* is chronologically and its authenticity is considered secure, based on appearing on the title page of the work "*Sei Solo a Violino Senza Basso Accompagnato LibroPrimo da Joh. Seb. Bach Ao. 1720*" (Reiss, 2016).

The original manuscript of Violin Sonatas and Partitas BWV 1001-1006 has two version. One is believed to be an incomplete copy made by Johann Peter Kellner in 1726. The other version, which was made by Bach's second wife, Anna Magdalena (Reiss, 2016). Anna Magdalene's version is the accepted literature as the official literature of this composition. More than 50 years after Bach's death, Magdalena' version was finally printed by Nikolaus Simrock in 1802 (Betancourt, 1999; Chang, 2019; Fabrikant, 2006). Furthermore, Ferdinand David brought the first publication of Violin Sonatas and Partitas BWV 1001-

1006 edited with fingering, bowing and annotations at the Leipzig Conservatory in 1843 (Fabian, 2005; Sun, 2001). Meanwhile, the first performances by David and Joseph Joachim in the early 1840s (Erickson, 2002).

Artistically, Bach's Violin Sonatas and Partitas BWV 1001-1006 have been described as occupying an unchallenged position in the literature of solo violin music. Generally, the partita is usually written for a solo instrument which is inspired by dance movement in baroque era. The *Allemande, Sarabande, Courante*, and *Gigue* became the basic grouping for the Baroque instrumental partita or dance suite (Park, 2003). Johan Sabastian Bach (1685-1750) composed Partita II in D minor, BWV 1004 for solo violin in five movements: *Allemande, Courante, Sarabande, Gigue* and Chaconne as the final movement. Among the five movements in Bach's Partita II D minor, BWV 1004, Chaconne is the selected repertoire of my research. Before examining the artistic features of Chaconne, I will review a number of references related to Chaconne's origins from a historical perspective.

Rosas de Oquendo (1955) as quoted by Hudson (1970) described The Chacona's words it self-appears in the poem *Mateo Rosas de Oquendo Satira becha a las cosas que pasan en el Peru anio de 1598* as which is one of the lists of dances in poems such as *La zarabanda y bolana, el churunba y el taparque, la chacona y el totarque*. The Chaconne's song originated from the popular guitar music of Spain as a dance-song in 3/4time signature (McEwing, 2008) which was traditionally accompanied by Spanish guitar, castanets and tambourine (Little & Jenne, 2009).

The history of the Chaconne has been explored in depth by the musicologist Walker (1968) in his articles" Ciaccona and Passacaglia: Remarks on their Origin and Early History" Regarding the Spanish guitar, the notation and transcription of rasgueado or chordal guitar music in chaconne is treated in detail by Walter with Spanish guitar tablature. In classical guitar techniques, the *rasgueado* playing was actually played with an unfurling of three or four fingers of the right hand and the courses sounded not simultaneously, but in a rapid arpeggio (Hudson, 1970).

Regarding Chaconne's early appearances in Italy, Walker (1968) state that Chaconne developed on the Italy during a period of high popularity of five Spanish courses in the early seventeenth century guitar music. Girolamo Montesardo, composed the chaconne for the guitar collection on the Nuova discoverye d'intavolatura per sonare li balletti sopra la chitarra spagniuola 1606. In the seventeenth century beside the guitar instruments, Chaconne as a genre has also inspired other Italian composers to be created into keyboard compositions. Frescobaldi was the first Italian composer to compose the chaconne genre for keyboard music in in *Partite sopra Ciaccona* from *Il Secondo Libro di Toccate Canzone* versi *d'hinni magnificat gagliarde corrente et altre partite d'intavolatura di cembalo et organo* in 1627 (Araújo Edlund, 2011; Hudson, 1970). Other than that, he states that the chord sequences in chaconne were strummed downwards and upwards with a preference for the harmonic scheme I-V-II-V, which can be set beside the other two early harmonic forms I-V -IV-V and the favoured one: I-V-vi-V.

However, the adaptation of keyboard techniques to the *rasgueado* playing style of guitar music, led to the bass pattern shifting from chords to a more linear playing style, and, as a result, chaconne increasingly associated with *ostinato* bass which was, most commonly a descending *tetrachord* pattern. Frescobaldi's *Partite sopra Ciaccona* consists of fifteen numbered phrases based on the four-bar harmonic phrase. Throughout the piece, Frescobaldi uses the straightforward harmonic progression I -V, which is applied in two slightly different variations: I-V-vi-(I-ii) -V and I-V-vi-(vii/V)-V (Park, 2003).

Frescobaldi's *Partite sopra Ciaccona* has a

musical impact on all three aspects as some musicologists conclude. The first, Hudson (1982; p.24) stated that the chaconne in the Italian style appears as a derivative of the harmonic pattern. The second, Silbiger (1999, p.16) considers Frescobaldi as an important figure who played an important role in redefining the chaconne genre moving forward with cheerfulness and enthusiasm in up-beat manner. The third, Walker (1968; p.317) explained that the musical scheme of the ciaccona as a ritornello. In this case, Walter strengthens his argument by citing as mentioned by Helga Spohr (1956) with the list of Italian composers *ciaccona ritornelli* in the works of Visconti (1616), Corbetta (1639), Carbonchi (1643), Calvi (1646), Pesori (1649).

The Chaconne in France is found in the repertoire lute. One of the important repertoires is La chacona á 7 in the second edition of Le secret des muses (1618) by Nicolas Vallet (Bates, 1981). Later, Franciscan keyboard composers such as Jacques Champion de Chambonnières (1602-1672) and Louis Couperin (1626-1672) synthesized the chaconne genre with the rondo form and bass *ostinato* (Hudson, 1970). In others instrument, Robert de Visée (1655 – 1732/1733) composed two chaconnes for guitar in 1682 and 1686, and Marin Marais (1656- 1728) composed for violin in 1701. Meanwhile, French composers adopted chaconne dances into theatrical presentations as early as 1658 (Jean-Baptiste Lully's Alcidiane), and the Chaconne is included in most French theatrical works of the late seventeenth century and well into the eighteenth (Little & Jenne, 2009).

The historical perspective of the Chaconne as described in a number of references above is different from how Bach's Chaconne. Silbiger (1999) emphasizes that the Chaconne by Bach is something unique and far from the previous traditional Chaconne, whether Spanish, Italian, or French. Regarding the differences with the genres that exist in Italy and France, Little and Jenne (2009; p.203), share a similar opinion that Bach's chaconne juxtaposes French and Italian styles. French style appears in the chordal section which highlights the syncopated sarabande module and dotted rhythms. Meanwhile, the Italian style appears in the virtuoso section with seemingly infinite variety of diminutions.

Regarding solo violin compositions on Bach's partita, Lester (1999, p.9) states indeed, Bach was not a famous violinist as his Italian counterparts Arcangelo Corelli (1653-1713) and Antonio Vivaldi (1653-1713). But, something to be understood is that Bach certainly has a deep understanding of his violin music which shows that he is the violinist and composer to create the perfect solo violin music. The Chaconne represents the pinnacle of Bach's work for solo violin (Chang, 2019) where levels of polyphonic activity have pioneered the violin reportorial canon (Abraham, 2018).

Although the Chaconne was the original composition for the violin, however, the Chaconne's greatness as a composition goes a long way. The beauty of the Chaconne's composition attracts the attention of famous composer and instrumentalists such as Robert Schumann (1810-1856), Felix Mendelssohn (1809-1847), Johannes Brahms (1833-1897) and the like.

The various transcriptions to other instruments have occurred since the 19th century. Some of Chaconne's transcriptions to other instruments are as follows:

- Felix Bartholdy-Mendelssohn, piano accompaniment transcription, London, Ewer & Co. 1847; Hamburg, Crantz 1847; Leipzig, Breitkopf & Härtel, 1849.

- Robert Schumann, piano accompaniment transcription. Original title: Sechs sonaten für die Violine von J. S. Bach mit hinzugefügter Begleitung des Pianoforte von Robert Schumann, Leipzig, Breitkopf & Härtel, 1854.

- Ernst Pauer, piano transcription, Leipzig, Sneff, 1867.
- Karl Reinecke, piano. transcription, Leipzig, Breitkopf & Härtel, 1874 (based on Mendelssohn's and Schumann's transcriptions for piano accompaniments).
- Johannes Brahms, transcription for piano, left hand; in Studien für das Pianoforte, vol V, Leipzig, Sneff, 1879.
- Ferruccio B. Busoni, piano. transcription Title: Chaconne aus der Vierten Sonate für Violine allein von Johann Sebastian Bach. Zum Concertvortrage für Pianoforte bearbeitet und Herrn Eugen d'Albert zugeeinget von Ferruccio B. Busoni, Leipzig, Breitkopf & Härtel, 1893.
- H. Messerer, organ transcription, in Les grands Maîtres de l'Orgue, Paris, Leduc, 1909.
- Riccardo Nielsen, string orchestra transcription, Milano, Carish, 1936.
- Andrés Segovia, classical guitar transcription, Schott, 1934
- Narciso Yepes (1927-1997), classical guitar transcription, Ediciones Musicales Madrid, 1960
- Karl Scheit, classical guitar transcription, Wien, Universal-Edition, 1985.
- Carlevaro' classical guitar transcription, Chanterelle, 1989, (integral part of Carlevaro's guitar masterclasses series).

Compositional Aspects

The Bach's Chaconne is a monumental classic of the Western Canon, yet its structure is deceptively simple: a series of four-bar loops, each with a nearly similar harmonic foundation (Lester, 1999). Partitas are collections of dance music set in a certain key. The terms "Bach" and "dance" may not be immediately associated, and it is conceivable that he did not intend for anybody to do a literal chaconne to his Chaconne (McEwing, 2008). Nonetheless, it retains a dance framework. It's fascinating to see how Bach gradually increases the intricacy and intensity. This does not follow a linear development throughout the piece. As rhythms get more complicated, harmonies become simpler, and vice versa. The classification of Bach's Chaconne BWV 1004 in D minor is divided into 1 theme and 32 variations. Chaconne can be classified into three large sections.

- The D minor key in bars 1-131 which covers one theme and variations 1 to 15.
- The D major key in bars 132-207 which covers variations from 16-25.
- The D minor key in bars 208-256 which covers one theme and variations from 26-31

The large sections in Bach's Chaconne as depicted in Figure 1

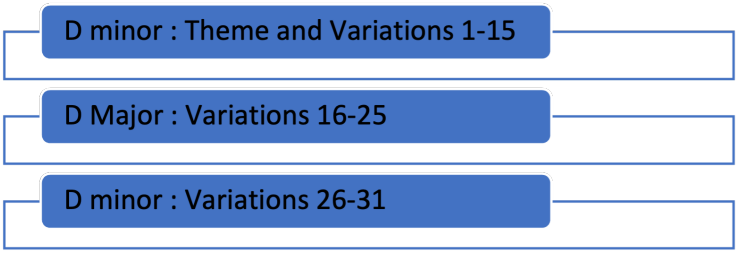

Figure 1. The large sections in Bach's Chaconne

In the term of form and music structure, the basic structure of Chaconne is shaped by a short harmonic progression which is grounded by the *ostinato* figure bass movements (Kyung, 1999). The pattern of *ostinat*o is created with the *tetrachord* descending movements. There are three patterns of *ostinato* in Bach's Chaconne. The first is based on the descending D *harmonic-minor tetrachord* (D, C#, Bb, A). The second is based on the descending D *Phrygian tetrachord* (D, C, Bb, A). The third is based on the descending D *major tetrachord* (D, C#, B, A) in which is called as the *Maggiore*. The three patterns of ostinato in Bach's Chaconne as depicted in figure 2, 3 and 4.

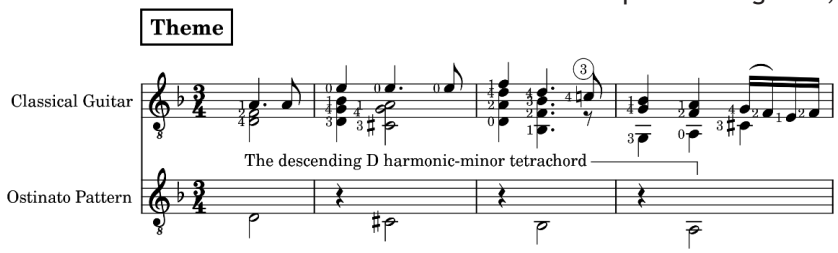

Figure 2. The descending D *harmonic-minor tetrachord* in Bach's Chaconne

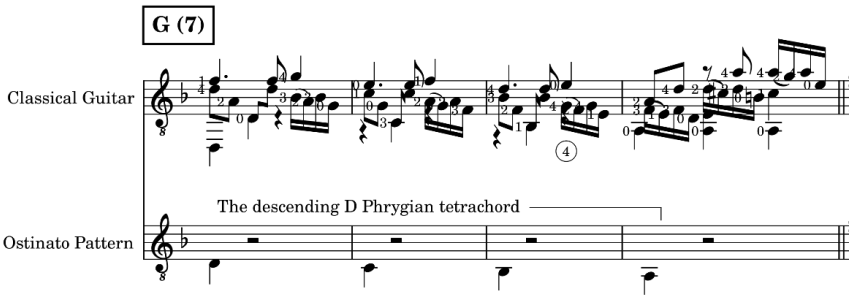

Figure 3. The descending D *Phrygian tetrachord* in Bach's Chaconne

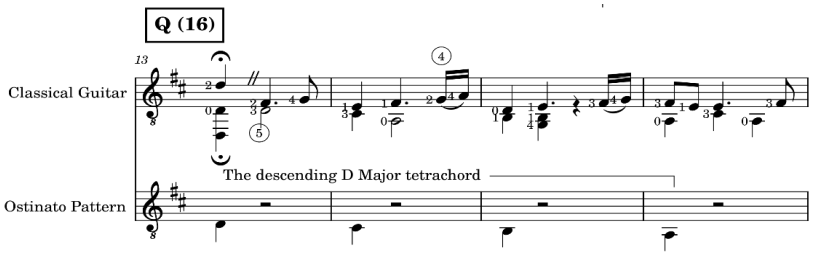

Figure 4. The descending D *major tetrachord* in Bach's Chaconne

Based on the score analysis, there is *ostinato* pattern change in the first beat and second beat. In the context of music performance, the figure bass movement in the *ostinato* pattern is translated in the form of an accent or strong beat. The previous discussion on literature review stated that the accentuation or strong beat in traditional Chaconne is found on the second beat. Meanwhile, the accentuation or strong beat in the Bach's Chaconne is found on the first and second beats. In this sense, there are two model of accentuation or strong beat of any variation in Bach's Chaconne. The first is on the second beat like in the theme, Var.1,2,3,31. The second is on the first beat, as in variations apart from the theme, Var.1,2,3,31. Reflecting from this understanding, there is a difference in accentuation or strong beat between traditional Chaconne and Bach's Chaconne.

Phrasing in Bach's Chaconne is shaped by the contrapuntal texture where two or more melodic lines movement are combined simultaneously. This is important to emphasize that the existence of bass movements is not as chord accompaniment but as independent melodic lines in the form of *ostinato*. The main melodic lines were created by *ostinato* pattern in the form of descending figure bass movement, as stated in the previous explanation. Meanwhile, the other melodic lines were created by various of musical idea consist of scales as shown in figure 5., arpeggios as shown in figure 6., intervals as shown in figure 7 dan chord progressions as shown in figure 8.

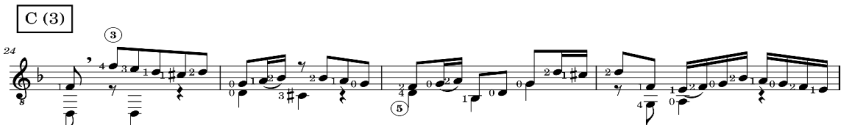

Figure 5. The *ostinato* pattern and idea of musical scales in Bach's Chaconne

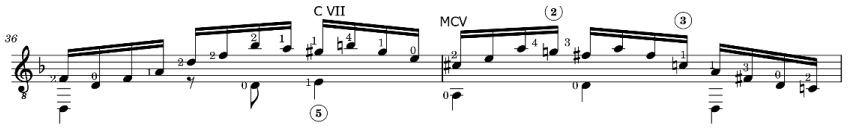

Figure 6. The *ostinato* pattern and idea of musical arpeggios in Bach's Chaconne

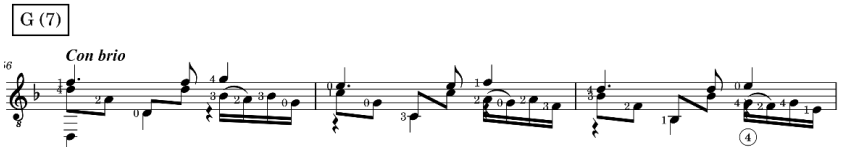

Figure 7. The *ostinato* pattern and idea of musical intervals in Bach's Chaconne

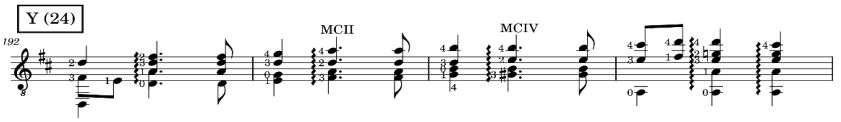

Figure 8. The *ostinato* pattern and idea of chord progressions in Bach's Chaconne

In a compositional perspective, the formal texture of Bach's Chaconne is polyphonic. In this perspective, there is mutual concession between melody movement and *ostinato* patterns. In other words, there is more than one phrase simultaneously. There are three models of mutual concession between *ostinato* patterns and other melodic lines. The first, both *ostinato* and other melodic lines have their own patterns as shown in figure 9. The second, there is a confluence of notes between the ostinato pattern and other melodic lines as shown in figure 10. The third, there is a dialogue between the ostinato and the other melodic lines as shown in figure 11.

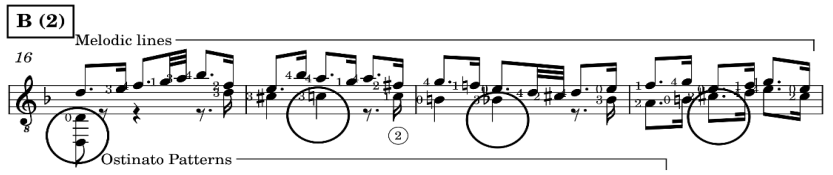

Figure 9. The independent movement of *ostinato* pattern and melodic lines in Bach's Chaconne

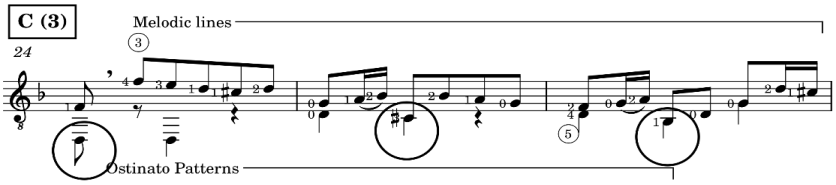

Figure 10. The *ostinato* and the other melodic lines meet at a specific note in Bach's Chaconne

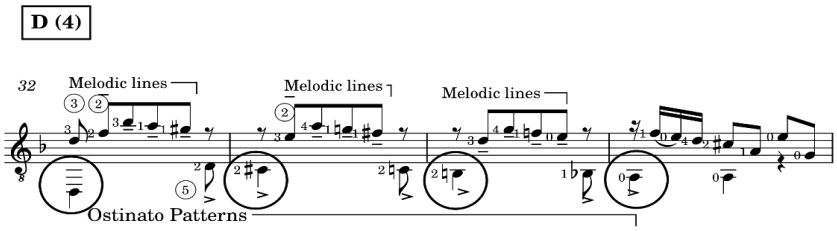

Figure 11. The dialogues between *ostinato* and the other melodic lines in Bach's Chaconne

Method of Examining Musical Scores

According to Harb (2014) and Abraham (2019), Bach converts the traditionally single-voiced violin into a quasi-polyphonic instrument. These pieces can be classified as self-accompanied compositions since the accompaniment is built within the single melodic line written for a solo violin. Bach expresses this polyphonic richness through three methods: arpeggiation, melodic leaps, and consecutive chords (Ritchie, 2016).

The analytical aspects of this study were conducted by comparing and contrasting the scores of the original Violin piece and Segovia's transcription. The analysis includes to determine the polyphonic capabilities, harmonic exploration, and expressive interpretation. The polyphonic capabilities, harmonic exploration and expressive interpretation in Segovia's transcription are essential for comprehending the artistic and technical difficulties presented by Segovia's transcription of Bach's Chaconne. Through the analysis of these elements, the research can provide a more profound understanding of how the transcription both respects and alters Bach's original composition. This analysis uncovers fresh interpretative opportunities that expand the Chaconne's influence from the violin to the classical guitar. The Polyphonic capabilities, harmonic exploration and interpretative expression possible on the guitar provide a distinct approach that can uncover new dimensions of the piece.

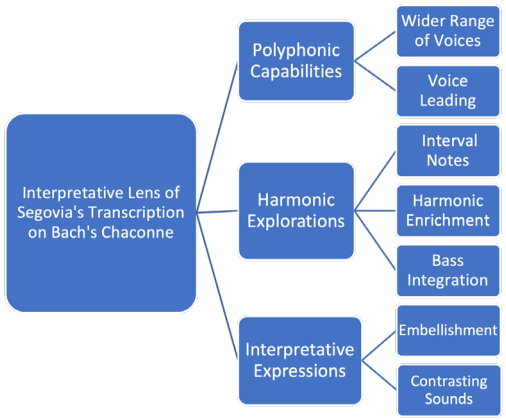

Figure 12. The interpretative lens of Segovia's transcription on Bach's Chaconne

Polyphonic instrumentation refers to an instrument's ability to produce multiple distinct melodic lines at the same time. The classical guitar, unlike the violin, has the unique ability to produce complex textures and harmonies due to its inherent polyphonic nature. The guitar's polyphonic capabilities can enhance the clarity of voices, resonance, and articulation (Cano, 2016). To fully comprehend Segovia's transcription of Bach's Chaconne, it is imperative to look into the intricate polyphonic capabilities of the classical guitar. For the beginning of with the investigation in this phase, one might commence by contrasting the original violin score with Segovia's guitar transcription in order to discern disparities in vocal range. By mapping out the range of notes used in both versions, the study can visually and quantitatively demonstrate how Segovia expands the voice range.

The second analytical tools in polyphonic capabilities of Segovia's transcription are relate to identify voice leading and register shifts. This could involve moving an inner voice from a mid-range position in the violin score to a bass line on the guitar or extending a melodic line to higher or lower notes than the original. By highlighting these shifts, the study can illustrate how Segovia exploits the guitar's range to enhance the polyphonic texture. This exploration enables the guitarist to emphasize the intricate counterpoint and voice leading, such as a wider range of voices and sustain chord movements, which are suggested in the original violin score but not fully expressed due to the violin's monophonic nature.

Harmonic exploration involves the exploration and expansion of harmonies in a transcription in the form of interval notes, harmonic enrichment and bass integration. Harmonic enrichment involves incorporating chords, embellishments, or extended harmonies to enhance the harmonic complexity of a piece. Through a careful analysis of interval notes, this research aims to reveal the ways in which Segovia both preserves and transforms the harmonic framework of the Chaconne. This could entail analysing particular sections where intervals have been modified and evaluating the impact of these alterations on the overall harmonic progression and emotional expression. One notable distinction between the guitar and the violin is the way bass lines are incorporated. The guitar provides a platform for long-lasting and expressive bass notes, creating a solid base and a contrasting element to the melody.

The contrast between chords and single notes is a fundamental aspect of interpretative expression on the classical guitar. While the violin's monophonic nature limits the ability to create such contrasts, the guitar's polyphonic capabilities allow for a rich interplay between full chords and isolated single notes. This contrast is not just a technical feature but also a powerful expressive tool that can shape the emotional trajectory of the piece. Analysing how Segovia uses this contrasting part can reveal his interpretative decisions in bringing out the structural and emotional nuances of the Chaconne.

Embellishments, such as *trills*, *mordents*, and other ornamental figures, are integral to the expressive interpretation of Baroque music. The analysis of interpretative expressions in Segovia's transcription of Bach's Chaconne is vital for understanding how he brings the piece to life on the guitar. The sonic contrast between chords and single notes, alongside the use of embellishments, are key elements that contribute to the transcription's expressiveness and emotional depth. By examining these aspects, the research can uncover the nuances of Segovia's interpretative choices, shedding light on how he translates Bach's violin work into a compelling guitar performance. This exploration is essential for appreciating the interpretative richness of Segovia's transcription and its lasting impact on the repertoire and performance practice of classical guitar.

Result and Discussion

Polyphonic Capabilities

There are two fundamental components that necessitate adaptation when transcribing from violin to classical guitar. The initial concern pertains to the pitch area. The pitch area of the violin is from G3 (196 Hz) to A7 (3.520 Hz). In the meantime, the classical guitar's pitch range is E2 (82 Hz) to B5 (994 Hz) as shown at figure 13. In view of this comprehension, the violin features a broader high-pitched range. In contrast, the classical guitar possesses a more extensive low-pitched range. Second, the standard notation is engaged. Nevertheless, the treble clef is employed in the standard notation of the violin and classical guitar. However, the sound of the classical guitar is one octave lower than the written note. In other terms, the melody of Chaconne on classical guitar is one octave lower than it is written on the violin score. In simplifying the notation, at the bottom of the clef on classical guitar notation is given the octave symbol.

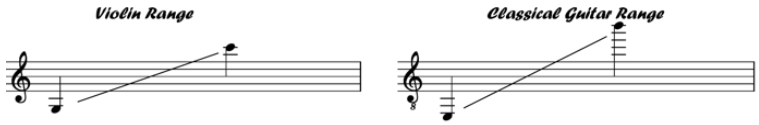

Figure 13. Comparison Violin and Classical Guitar Range

In his transcription, Segovia accommodates Chaconne's original key signature in D. In his interpretative approach, Segovia employs an alternate string tuning, which is commonly known as drop D *scordatura* tuning (Duncan, 1995; Hu, 2019). In this case, the sixth string is the lowest string on the classical guitar, which was originally E2 dropped to D2 in his transcription. Segovia's tuning approach is exceptionally smart; scordatura tuning has two important effects on the musical and expressive aspects. The first difference between this tuning and the original score is that it allows for doubling in the bass tonic for a more expressive tone, as demonstrated in bars 8, 12, 16, 20, 24, 28, and so on. The following step is to make the arpeggios in a broader range, as seen on bars 88-119. John Williams and a number of great classical guitarists concur on the application of scordatura tuning in the Chaconne. Figure 14 and 15 illustrates a comparison between Chaconne's original notation on the violin and classical guitar transcription by Segovia. In compare to violin's score, Segovia on bars 8, 12, 16, 20, 24 and 28 developed the original chord texture into the classical guitar range.

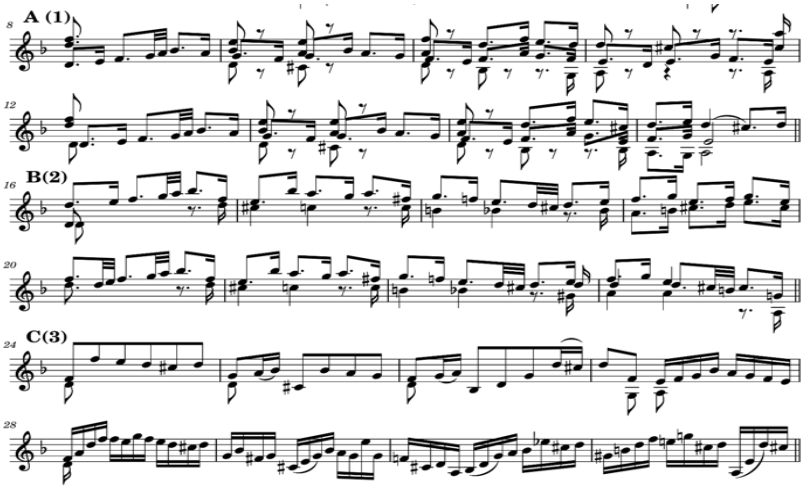

Figure 14. Bach's Chaconne for solo violin on the bar 8-31

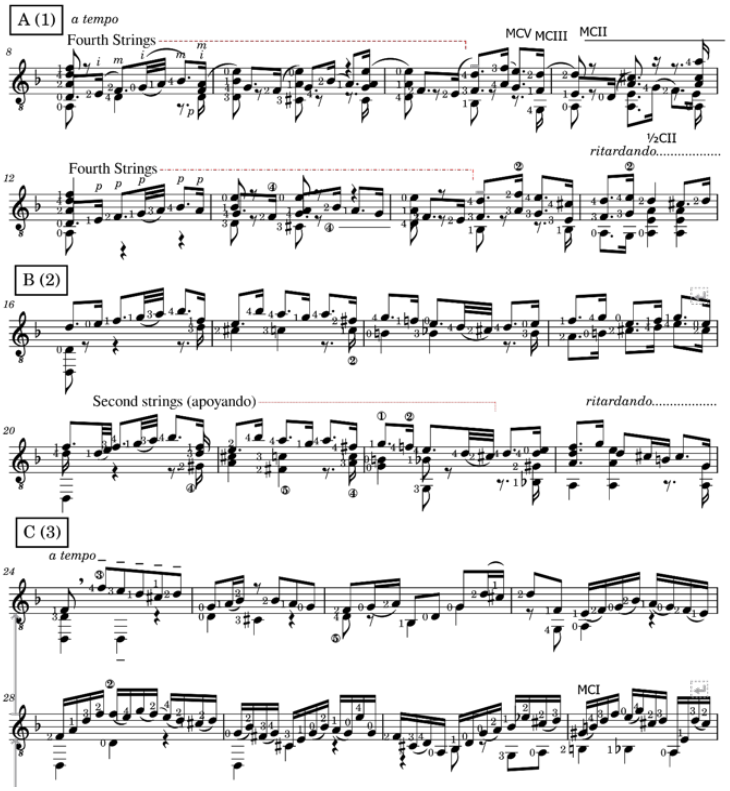

Figure 15. Transcription of Andrés Segovia's Chaconne for classical guitar solo at bars 8-31

While comparing the violin scores, Segovia did more than just transcribe it; he additionally utilized advantage of the guitar instrument in this works. Indeed, the guitar's ability to play extended notes and intensity is restricted. However, the employing of scordatura and texture in certain parts demonstrates that Segovia realizes that the classical guitar has a distinctive way of expressing Bach's Chaconne BWV 1004 in D minor. Segovia's transcription enhances the harmonic structure and brings a new layer of interpretation to the music, enriching its texture and depth (Fierens, 2019).

In terms of voice leading, due to the physical restrictions of playing numerous notes at the same time, multi-stop chords on the violin sometimes necessitate the performer arpeggiating the notes or breaking them into separate bow strokes (Chang, 2019). This can result in a more fragmented or staggered voice leading, in which different notes within a chord do not sustain equally (Lester, 1999). In the meantime, the classical guitar enables the simultaneous and prolonged playing of all notes inside a chord, resulting in smoother voice leading.

When playing any of Bach's unaccompanied solos, violinists must supply their own accompaniment. Violinists must play several voices yet cannot sustain all of the strings at once, needing a continuous rolling chord style (Schulenberg, 2017). String crossings cause a number of issues, including uneven sounds, noises, and extra notes. It is quite difficult to keep a rhythmically exact melody when dealing with different harmonic sounds (De Los Santos, 2004). Figures 16, 17 and 18 demonstrate Segovia's use of octave displacement to maintain smoother chord transitions compare the violin score, as well as how he integrates bass lines or upper voices into other registers to maintain voice leading coherence.

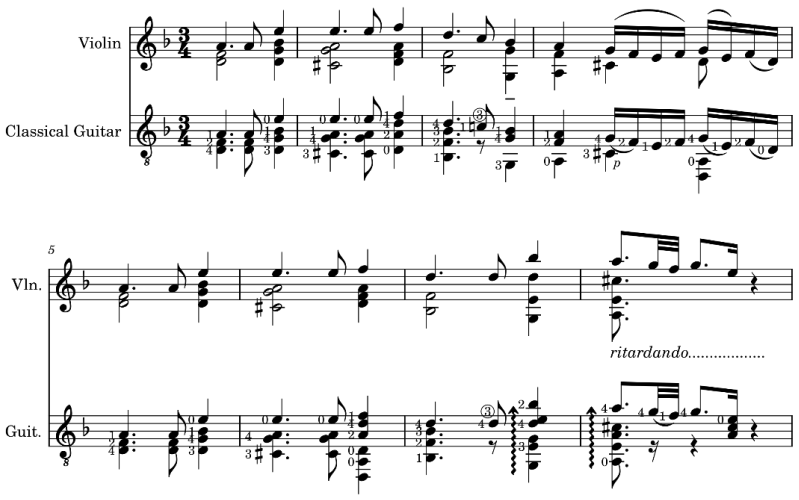

Figure 16. Comparation the violin's score and Segovia's Chord textures on theme

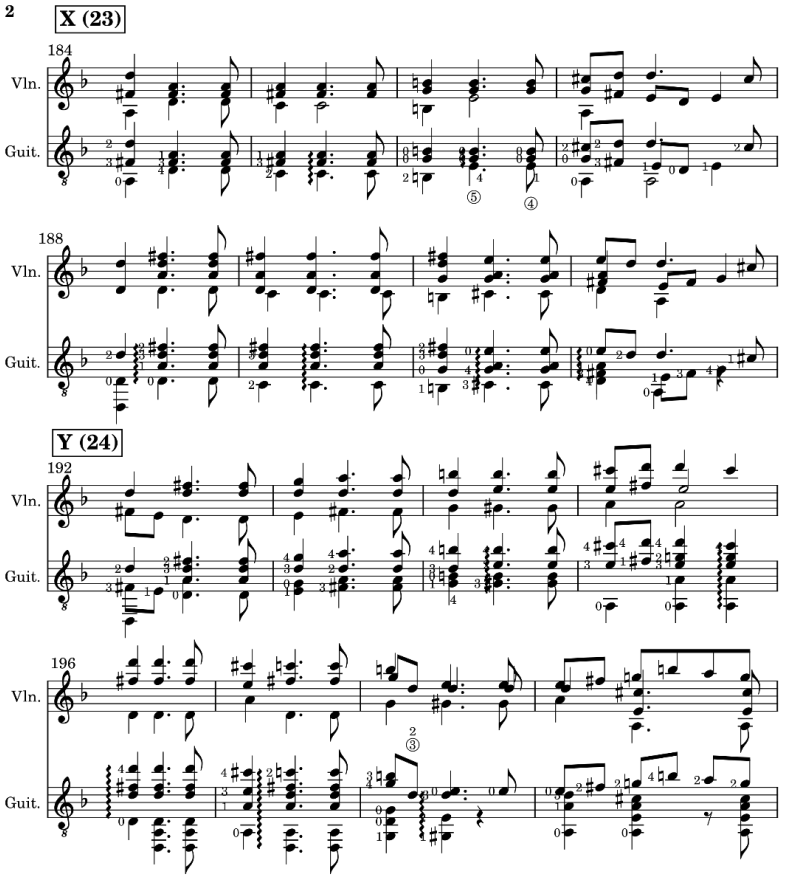

Figure 17. Comparation the violin's score and Segovia's Chord textures on Var. X and Y

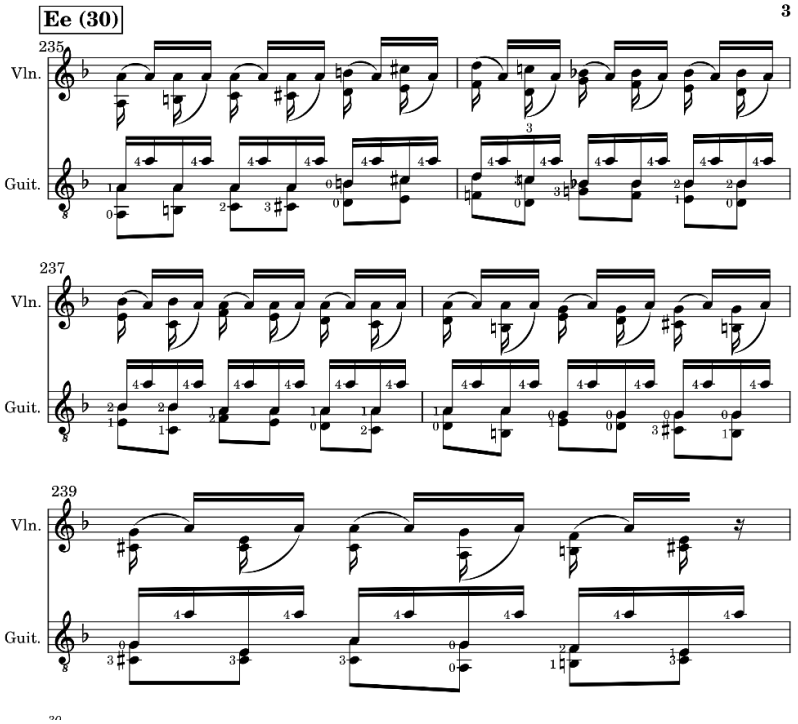

Figure 18. Comparation the violin's score and Segovia's Chord textures on Var. Ee

The main distinctions between Segovia's transcription and the original violin score are to voice leading and register changes, which are influenced by the guitar's capacity to sustain numerous voices, facilitate smoother range transitions, and successfully include bass lines (Wade, 2018). Segovia's version of Bach's Chaconne stands out for its polyphonic complexity and harmonic richness, in contrast to the violin original's more linear and fragmented approach (O'Toole, 2019; Ugrich, 2018).

Harmonic explorations

Whereas the violin is tuned in intervals of fifths, the guitar's tuning in intervals of fourths and a third enables other harmonic possibilities (Tyler & Sparks, 2002). By experimenting with different fingerings and voicings, guitarists have the opportunity to discover alternative harmonic possibilities throughout the composition. In Segovia's transcription on Bach's Chacone, the guitar is able to express multiple voices simultaneously, which is represented by the highlighted intervals in the image. These intervals illustrate how the guitar can sustain and emphasize multiple lines of music concurrently, something that is more challenging on the violin due to its single-string bowing technique (Sun, 2001). The guitar can present a fuller harmonic structure, where the interaction between the bass, middle, and treble voices create a richer polyphonic texture. This allows for a deeper exploration of the harmonic relationships between these voices as illustrated at figure 19.

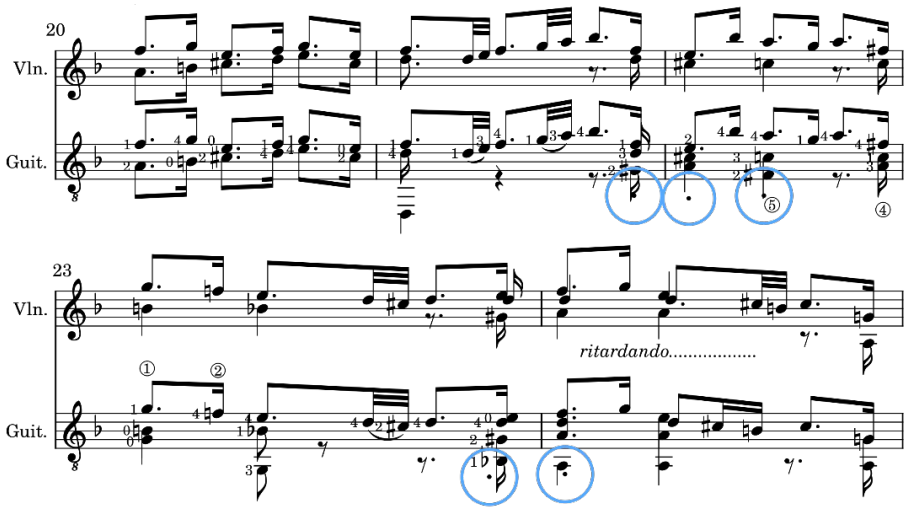

Figure 19. Segovia's harmonic exploration on bar 20 to 24

These added intervals and the clear delineation of independent voices as showed at figure 7 allow the guitar to express a richer, more complex harmonic structure than the original violin manuscript. Segovia's transcription takes full advantage of the guitar's polyphonic capabilities, providing a unique and deeply expressive interpretation of Bach's Chaconne. Segovia's transcription brings new dimensions to the Chaconne, enhancing its harmonic depth and showcasing the guitar's unique capabilities. This enhancement can make the piece more suitable for the guitar, adding depth and creating a more complete sound (Harb, 2014).

In the term of harmonic enrichment, Segovia adds a chord texture to create the dialogue between high and low notes become contrary motion as illustrated at figure 20.

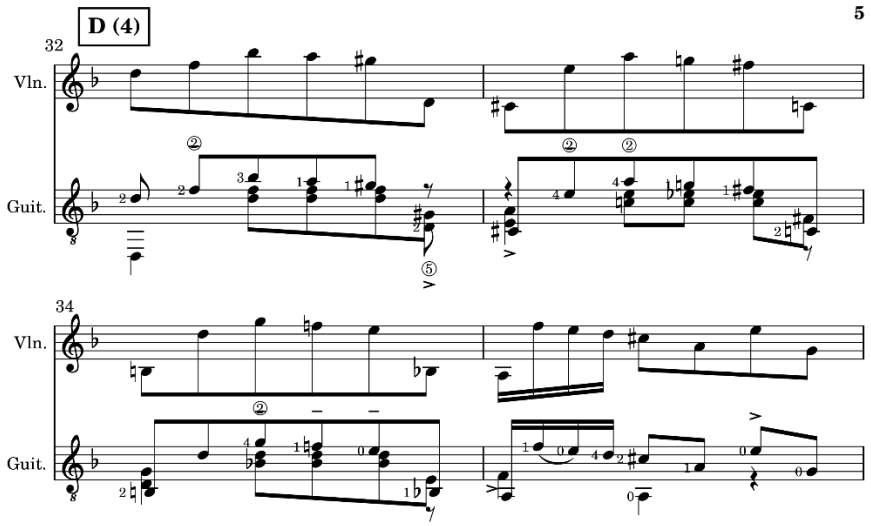

Figure 20. Segovia's harmonic exploration on bar 32 to 35

Figure 20 demonstrate Segovia's addition of chord textures allows the guitar to play both higher and lower notes simultaneously. This is something the violin cannot achieve in the same way, given its limitations in polyphony. The guitar can move the bass line downward while the melody ascends, creating a contrary motion that enhances the harmonic and melodic interplay. The added chord textures in Segovia's transcription create a dialogue between the high notes (often carrying the melody) and the low notes (typically forming the bass line). This interplay adds depth to the performance, as the listener can perceive the conversation between different musical lines.

In the term of bass integration, the guitar's low-frequency strings enable the incorporation of a strong bass line in conjunction with the chord progressions, a capability that is not achievable on the violin. To successfully execute Bach's Chaconne, the violinist must accentuate the melodic and bass lines while playing difficult double stops and chords, retain attention in a complex musical structure consisting of a repeated four bar progression, and maintain a transparent tone and rhythmic balance (Chang, 2019). In addition, Bach frequently places the melody line between the top and bottom voices, making things even more hard from a technical standpoint (Chung, 2016).

Segovia's use of bass integration in his transcription of this piece for classical guitar is a clear example of how the guitar's unique capabilities can enrich the harmonic texture of a piece. This can enhance the complexity and provide a solid harmonic framework that accompanies the melody. By adding bass notes that interact with the melody and harmony, Segovia creates a more complex and expressive musical experience. This approach not only enhances the harmonic content but also adds depth, balance, and emotional resonance to the performance, demonstrating the guitar's potential for polyphonic and harmonic exploration far beyond what is possible on the violin as showed at figure 21, 22 and 23.

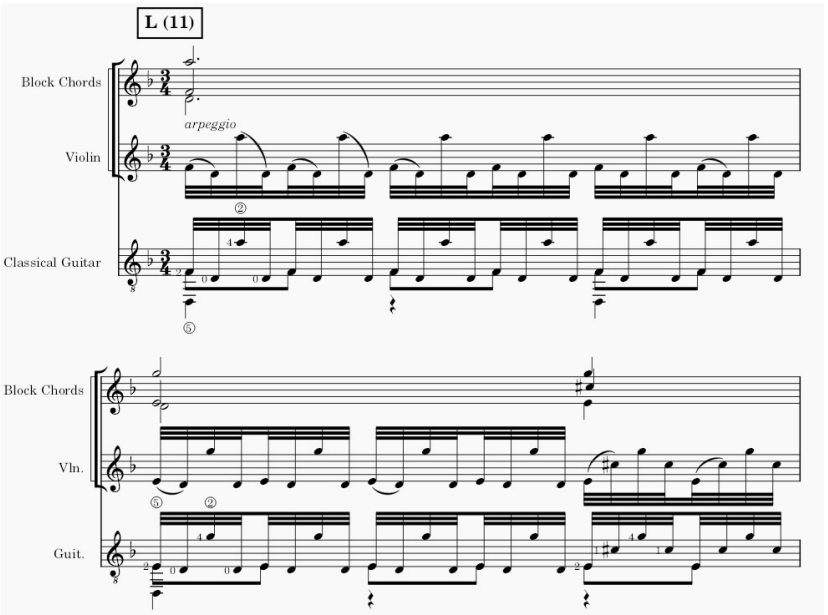

Figure 21. Segovia's harmonic exploration on section

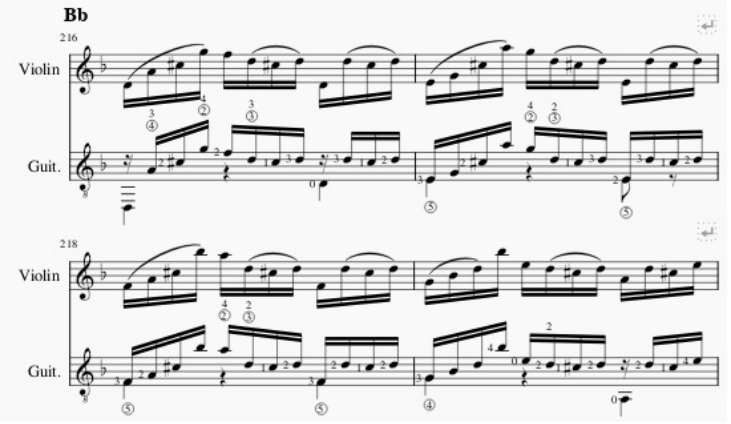

Figure 22. Segovia's harmonic exploration on section Bb

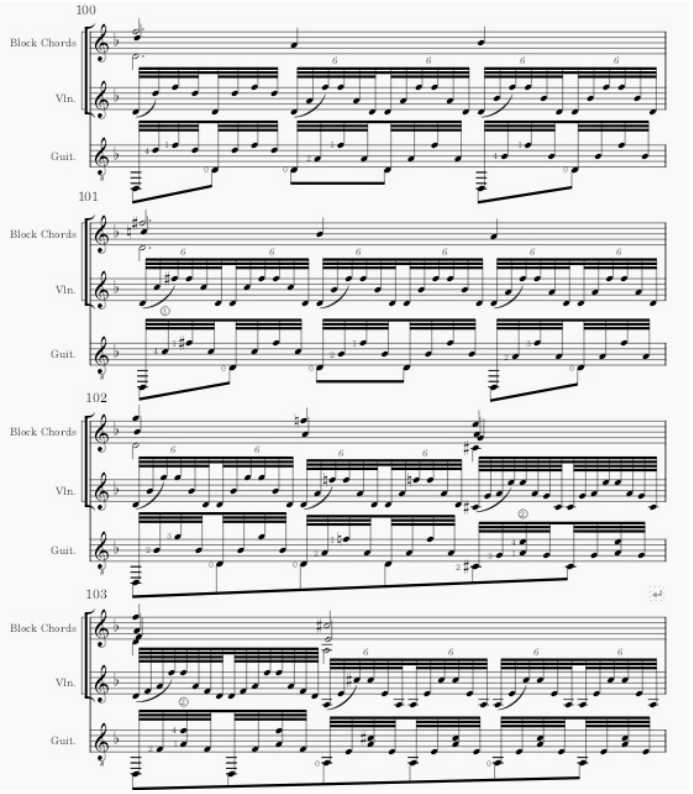

Figure 23. Segovia's arpeggio pattern on bar 100 to 103

Figure 24 below shows a comparison between a segment of the original violin composition and Segovia's transcription for classical guitar, focusing on the arpeggios. In this transcription, Segovia transforms sextuplet chord arpeggios from the violin into semiquaver (sixteenth note) chord arpeggios on the guitar. This change takes advantage of the guitar's ability to integrate bass notes more effectively and to exploit its unique capabilities in terms of rhythm and texture.

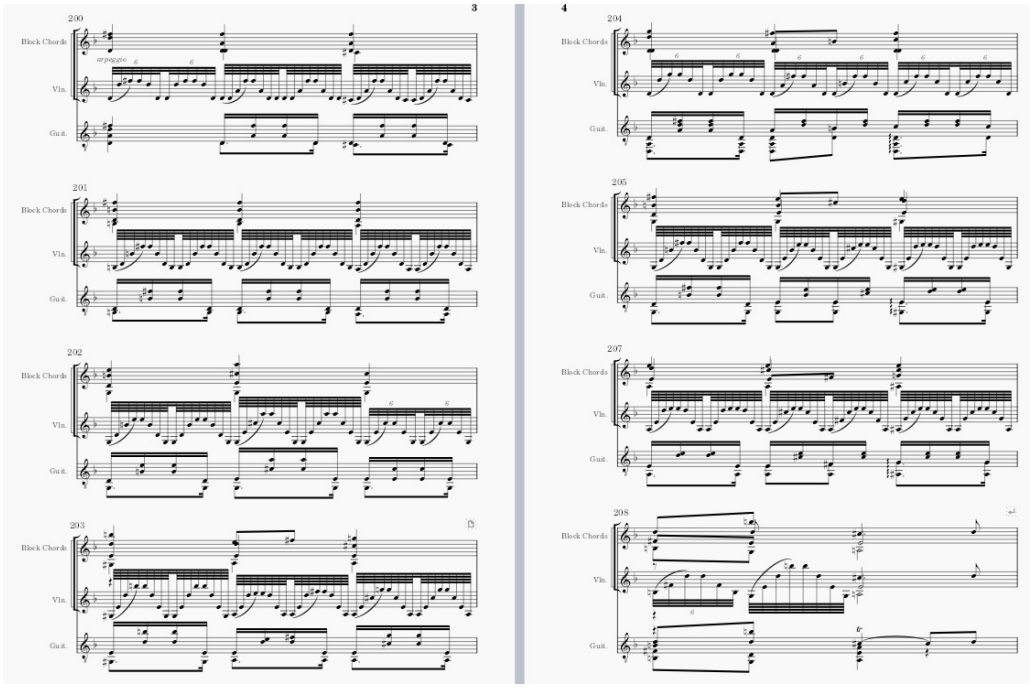

Figure 24. Segovia's arpeggio pattern on bar 200 to 208

On the violin, the sextuplet arpeggios are typically executed with a bowing technique that allows for a smooth and continuous sound. The violin's linear nature (one note at a time per string) results in a flowing, almost legato passage where each note is connected to the next. Segovia adapts these sextuplet arpeggios into semiquaver arpeggios on the guitar. The guitar's plucked string technique naturally lends itself to a more articulated and rhythmically distinct sound compared to the bowing of a violin. The semiquaver rhythm on the guitar allows for a crisp and clear articulation of each note within the arpeggio, which can emphasize the harmonic movement more strongly than on the violin. By converting the arpeggios to semiquavers, Segovia is able to integrate a clearer and more pronounced bass line into the music. The guitar, with its ability to sustain lower notes, can provide a consistent bass presence that supports the harmonic structure more effectively.

Interpretative expression

Segovia's use of embellishments in his transcriptions serves as a powerful tool for interpretative expression. Segovia uses embellishments to create contrast between different sections of the piece as illustrated at figure 25, 26 and 27.

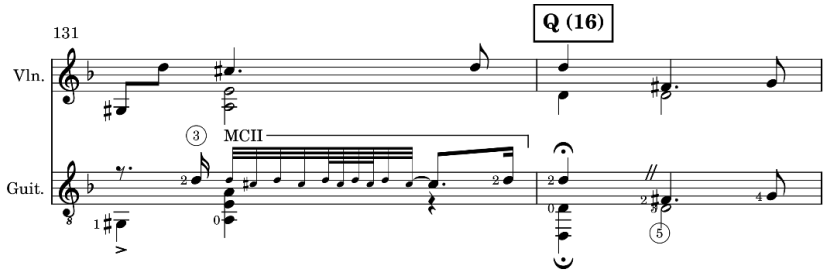

Figure 25. Segovia's embellishments on bar 131 to 132

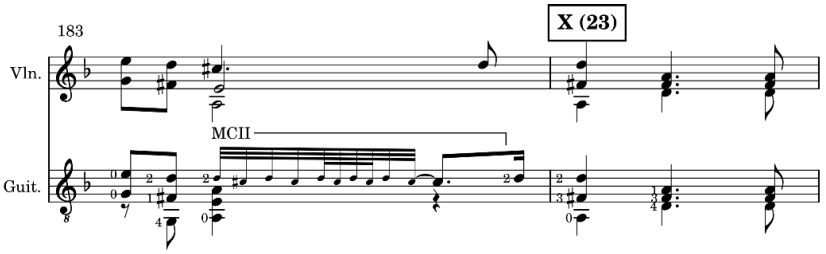

Figure 26. Segovia's embellishments on bar 183 to 184

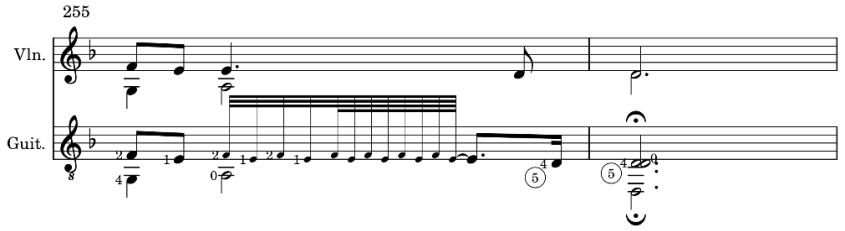

Figure 27. Segovia's embellishments on bar 255

Trills are commonly used at *cadences* (points of musical resolution) to emphasize the arrival at a key structural moment in the music. In Segovia's transcriptions, *cadential trills* are not only used to mark these moments but also to articulate structural points and to soften the transition between contrasting sections, maintaining the flow of the piece. On the guitar, *trills* can be sustained with a resonance that is different from the violin. Segovia's use of *trills* takes advantage of the guitar's ability to maintain a vibrating note over a period, allowing the trill to resonate fully and add a shimmering quality to the music. Segovia's *trills* are also a demonstration of technical fluency on the guitar. The rapid alternation between notes can be challenging, and by incorporating trills, Segovia showcases the guitar's capabilities for virtuosic playing.

The classical guitar is capable of producing a variety of tonal colours depending on where and how the strings are plucked. Segovia utilizes these tonal differences to create contrast. For example, playing near the bridge (ponticello) results in a brighter, more metallic sound, while playing over the sound hole (dolce) produces a warmer, rounder tone as illustrated at figure 28.

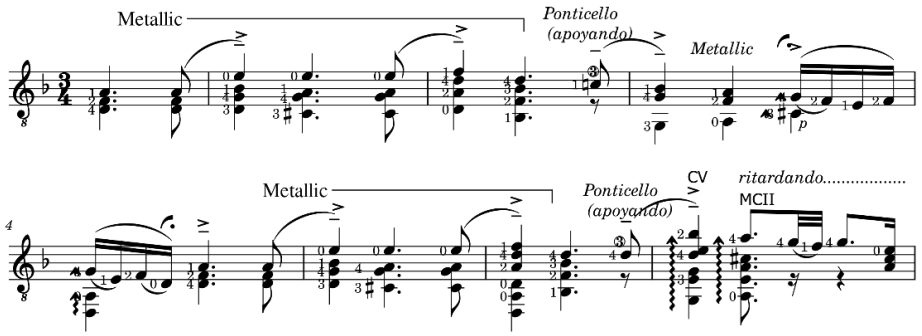

Figure 28. Segovia's variety of tonal colours on theme

On the guitar, the ability to play independent bass lines while simultaneously carrying a melody in the higher register allows for more intricate contrapuntal textures. This independence facilitates greater contrasts between different musical lines, enriching the harmonic and melodic complexity of the piece. Segovia's transcription demonstrates contrasts monophonic (single-line) passages with polyphonic (multi-voice) textures. A single melodic line might be followed by a rich chordal passage, or a contrapuntal section where multiple voices interact as illustrated at figure 29.

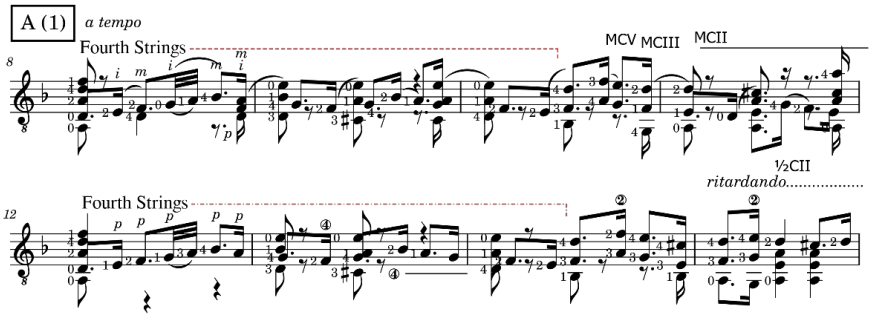

Figure 29. Segovia's variety of monophonic (single-line) passages with polyphonic (multi-voice) textures on section A

Conclusion

This study examined Segovia's classical guitar transcription of Bach's Chaconne from Partita No. 2 in D Minor, BWV 1004, focusing on the polyphonic capabilities, harmonic exploration, and expressive interpretation within the transcription. The importance of this research lies in its exploration of how Segovia managed to reconcile Bach's musical integrity with the artistic possibilities and constraints of the guitar, creating a transcription that not only respects the original composition but also enhances its expression and complexity.

This study found that Segovia's transcription enriches the harmonic and polyphonic texture of the Chaconne in ways that the violin, with its more linear and fragmented approach, cannot achieve. By employing techniques such as scordatura tuning, octave displacement, and bass integration, Segovia's transcription takes full advantage of the guitar's ability to sustain multiple voices and create a fuller, more expressive sound.

The findings of this study strongly resonate with Duarte's (1983) assertion that a good arrangement is one that "works" by making the music sound as though it might have been originally written for the receiving instrument, while also adding some new dimension. Segovia's transcription of Bach's Chaconne for classical guitar is a prime example of this principle. The study reveals that Segovia not only preserved the structural and expressive integrity of Bach's composition but also enhanced it by utilizing the guitar's unique polyphonic capabilities and harmonic richness.

The analysis of Segovia's classical guitar transcription of Bach's Chaconne from Partita No. 2 in D Minor, BWV 1004. Bach's primary intention in composing the Violin Sonatas and Partitas was to showcase his compositional prowess rather than the technical abilities of the violinist. This perspective implies that the core of Bach's music is not intrinsically tied to the violin but can be effectively conveyed through other instruments. Segovia's transcription exemplifies this by transferring the Chaconne from violin to guitar, demonstrating that the compositional integrity of the piece remains intact and can even be enhanced through the unique capabilities of the guitar.

Future research should continue to

explore the broader implications of guitar transcriptions of Bach's works, particularly in how they contribute to our understanding of polyphony and harmony in Baroque music. Further studies could also examine the performance practices associated with these transcriptions, providing insights into how musicians can faithfully interpret Bach's works on different instruments. Ultimately, this research underscores the value of transcription as a creative and interpretative process that can bring new life to classical compositions across diverse musical contexts.

Recommendations

Recommendations for Further Research

Future research should investigate how guitar transcriptions of Bach's other works contribute to our understanding of polyphony and harmony in Baroque music. Further studies could explore the performance practices associated with Segovia's and other transcriptions, providing insights into how musicians can faithfully interpret Bach's works on different instruments. Comparative analyses of different transcriptions of Bach's Chaconne could highlight how various transcription techniques impact the harmonic texture and interpretative possibilities on different instruments.

Recommendations for Applicants

Guitarists can benefit from exploring the polyphonic richness offered by Segovia's transcription, focusing on techniques like scordatura tuning and octave displacement. Educators can use Segovia's transcription to demonstrate effective methods of adapting polyphonic violin compositions to the guitar, emphasizing harmonic exploration and interpretative expression. This research offers valuable insights for transcribers looking to adapt compositions for guitar, focusing on preserving the original harmonic content while enriching the polyphonic texture.

Limitations of Study

This study focused only on the classical guitar's transcription of Bach's Chaconne, excluding other instruments that may present different transcription challenges and opportunities. The analysis of expressive interpretation, such as the use of embellishments, may be influenced by subjective interpretation, limiting the generalizability of findings. Comparisons were made between the violin and guitar scores only; a broader comparison including other transcriptions (e.g., piano or organ) might reveal further insights.

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Research Article

Women's contributions to music education and artistic life in Albania (1900-1950)

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Abstract

Women music educators in Albania are the most important part of development of music education at different levels of education. The purpose of this study is to shed light on women music educators from 1900-1950, which have been active in public and private schools, churches, and community organizations. This study is the first that analysed the women's contributions to music education in Albanian in the year 1900-1950 in the different public and private schools. The aim is to highlight the fundamental contribution of women music educators in a new generation of education and artistic life. It is also important to study this research because it provides historical insights about educational institutions that became cultural hallmarks over time. The article assumes the illustration of women music educators in Albania, the contribution for the development of instrumental-vocal pedagogy-music education and cultural life during the early 20th century, overcoming significant obstacles to pave the way for future generations and leaving a lasting legacy in the field. This research deals with the historical lack of interest of women in Albanian music education and artistic life between 1900-1950. Although women in the performing arts and in educational roles played an important part in this period. The path opened by these artists up for all girls and women to follow the path of teaching and art in Albania in a difficult historical, economic, social and cultural period. The research employs a qualitative (descriptive) methodology that encompasses the use of archival document analysis along with previous scholarship to develop a broad knowledge of the role of women in Albanian music education. The research is based on national programs and documents from the Central State Archive Primary sources are national programs, documents from Central State Archive, personal archive of artists especially of Jorgjia Truja. The results indicate that women educators played an essential role as pillars in the foundations of music education, but also of artistic life in Albania. People like Jorgjia Truja and Maria Kraja were very important in this: people who taught choral and instrumental work, and in a way invented vocal pedagogy. These women overcame significant societal and institutional barriers to create pathways for musical education and left a legacy that resonated long after their passings. Through this study, the contribution illuminate the struggles that brought them to the fore in the long struggle for full recognition of women educators in music. For future studies, it would be nice to go into further details about the contributions of women in Albanian music education and perform this study in other Balkan countries as well. Curricula should also reflect socio-cultural influences as perceived by women educators, fostering gender-sensitive pedagogical practices and mentorship schemes to inspire future generations of female musicians and educators.

Keywords

"Femminine Institute", first Artists music educators, "Institute Kyrias", women in music education

Introduction

The women musician, composer's development, actually has a history filled with struggles and achievements, shaped thoroughly by their social environment and conditions. At first, society allowed women to fulfill domestic roles and offered them no education or acknowledgment in music. That changed in the 19th century, with salons and music conservatories, which enabled composers like Clara Schumann and Fanny Mendelssohn to become successful.

In the 20th century, the feminist movements of the time challenged not only the status of women in society, but also claimed space and visibility for the works of female composers through the lens of identity

and social justice. The history of women composers ultimately provides a more expansive look at societal changes, but also an important acknowledgment of women composers and their contributions to the arts and future generations (Samson, 1997). In the second half of the 20th century, when European countries celebrated over 100 years of the jubilees of cultural and artistic institutions, Albania, this small country in the southeast of Europe, was timidly taking its first steps. Influenced by historical, political, economic, and social factors, it inherited from the past a significant educational, cultural, and artistic backwardness (Lici, 2024). In Albania between 1942-1944, Dhora Leka the first albaniain composer, composed partisan songs, with nearly 50 percent of these songs attributed to her. During the years of the communist regime, she was arrested, imprisoned, and subsequently exiled. After the 1990s, despite her advanced age, Dhora Leka gained recognition for her work during the war years. composed partisan songs (nearly 50 percent of these songs belong to her), while in the years of the communist regime she was arrested and then imprisoned and exiled. After the 1990s, Dhora Leka, although elderly, felt respect for her work during the War years (Tole, 2024). The role of women in music education, as well as artistic life in Albania (1900-1950) is fundamental to understanding historical and cultural dynamics of the period. So for many accomplishments, the role of female musicians and educators remains relatively neglected, especially in the Music education realm. This absence in the literature is surprising, especially considering the significant impact that these four women have made on the direction of music education. Its important to highlight the foundamental role of women music eductors for the education of new generations also for the artistic music life between the years 1878 to 1950 because is important historical period, between the and after the second World War. The subject is focused from the first Albanian School directed by two Albanian sisters educators, Paraskevi and Sevasti Kyrias "Mësonjëtorja shqip the first national public school, in 1922 the two sisters opened Instituti Kyrias one Institution who trained the teacher for general education in 1933 the "Feminine Institute" was the first public institution who developed vocal choral and instrumental education in the meantime Womens like a Singer Jorgjia Truja and Maria Kraja, pianist Lola Gjoka, became the first women musician that played an important role in Education of albanian women also in the artistic life. In Albania from the most recent music studies detect increased attention to feminist orientations in musicology, highlighting the call for hearing women's voices within discussions of music education. The available evidence also shows that, although the presence of women in the domain of musical education at a time was not on a grand scale, their foray into music education fathered both new generations of musicians and changes more broadly within Albanian society as well. As modern history lessons regarding the accomplishments and contributions of women in music get bigger every year, there's been just as sharp an increase in the number of books being written about them. (Pendle, 2001)

The significance of this research is the creation of an area of feminist musicology, which has received comparatively less attention, offering a unique geographical and historical context to the field. To a broader, cultural public, the study enriches music history by recognizing women's essential performances and, in turn, provides a more inclusive historical image. Economically, investing in gender-diverse music education systems leads to innovation. The results also provide evidence that acknowledging women's participation may encourage more financial support for gender-equity initiatives in the arts.

Theoretical Framework

There are several organizations and institutions working to record and preserve the important contributions women have

made in music. Now days in United States, in 2023 the International Alliance for Women in Music (IAWM) initiated projects to archive women's works and histories in music that will benefit researchers and educators widely (IAWM, 2015). Future generations will also be able to explore the works of female composers, performers and educators that shaped music history thanks to these documentation initiatives. Digital archives have revolutionized access to historical documents and music scores of women composers. These include searchable online repositories among other resources, which are being utilized and becoming more proficient in providing primary-source access relative to the women composing and teaching space. Burt and Barlow (2022) state that Digital archives have a key role to play in excavating women's 'hidden' histories in music—histories that might previously have gone unnoticed due to lack of documentation. Ethnomusicological research has recently unveiled the participation of women in different cultural environments such as-in, community music education or even grass-root movements. As pointed out in these studies, from the most visible artists to women musicians performing every day within communities and educational institutions, it is important domain of research. These contributions are integral to the cultural fabric and identity within communities (Wright & Fleming, 2012)

We need to remember women in music education through history as role models for today. Howe (2009) provides a historical view of women in music education careers and said that in the nineteenth and early twentieth century, music educators, even women had fewer chances to obtain a good tion. They needed support of family and mentors within the profession. As we entered the twentieth century, women benefited from high-quality education offered — often with support from their families and friends. But that access alone was not enough to drive national change in music education; women had to gain increasing access to leadership within the profession. Acording to Howe most women participated as national music organization leaders before the Music Educators National Conference was formed, serving as officers, committee members, and presenters in both the National Education Association (NEA) and the Music Supervisors National Conference (MSNC). Although the vast majority of elementary music teachers were women— most public school music supervisors, and many arts organization leaders were women leadership in hierarchical organizations such as MENC overshadowed their influence. (Howe, 2009). But in small Albania in the 20th century it happened differently on the contrary throughout Albanian history women have taught music in their homes and communities, women have taught singing in nursery schools, churches, and public and privat schools. In Albania women have directed instrumental ensembles choral and instrumental. They have directed instrumental ensembles, published textbooks, taught college courses, led organizations, and done research. While scholars have begun to write the biographies of some outstanding women in music education, there is no literature on how these women viewed their careers. Musicologists and composers since the year 2000 in Albania have published some books on women lyric singers, pianist, making highlighting women interpreter who were exceptions in their historical period. Music educators need to uncover women music teachers of the past as they are developing feminist theories in music education. This paper look some of successful, productive women music educators as models of success in the pedagogical and artistic career. What does it take for women in music education to become successful leaders and shapers of the profession? Most likely the successful educator came from a supportive family where she learned to play instruments, sang, and performed in encouraging environments. This educator received an excellent post-high school education including general education courses, music study, and teacher train- ing with supportive advisers

and mentors. At some point this educator probably felt a sense of mission or developed a philosophy to sustain a long-term career. As this model educator moved through different stages of a career (teaching various age groups, performing, accepting administrative responsibilities, and writing), there were many mentors plus supportive family relationships.

Women have long been the music teachers of Albania. She has been a vocal coach for ladies, in public and private school. In Albania women singer conduct both the Choral and Instrumental ensembles. They have, created music methods, books with music pieces, taught at the collegiate level and as administrators or researchers. Thus far, scholars have only written biographies of a few exceptional women in the history of music education and there is virtually no literature about how these subjects perceived their careers. Albanian musicologists and composer since the (year 2000) have published some women singers, pianist study were andreclusions particular females interpreter as rare case were in of their historical period. As music educators are developing feminist theories in music education, they must also dig for women from the past who were teaching music. This paper seeks to investigate examples of successful women music educators who have developed career paths possibly differing from the pattern. How can women so successful in their music education careers forge the path to leadership and help shape the profession that has served them so well? It is likely the educator with success experienced music in her life through family, playing instruments, singing and performing in a positive way.

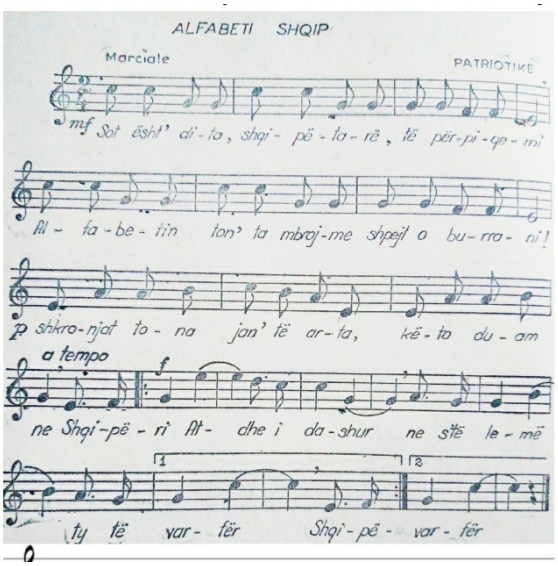


Figure 1. Alphabet song created by sisters Qiriazi in year 1908

This Hymn written by a woman, calls for the unity of Albanians around the alphabet, with pen in hand. In 1909, Parashqevia wrote "The Hymn of the Alphabet," published a primer with the new alphabet, and founded the national women's society "Morning Star." Later, in America, she published a newspaper with the same name (1917-1920), which dealt with patriotic, cultural, and educational topics for the Albanian and American context. Almost every issue featured the Albanian alphabet, which was disseminated and made understandable. Until now, it has been speculated that Parashqevia composed the Hymn of the Alphabet herself or that she borrowed it from a French march. However, what is the true origin of this music? (Parashqevi Qiriazi,

1909) This song have played, and still play, an important symbolic role in preparing the Albanian people to face military and political attacks, as well as instilling patriotic feelings. The "Hymn of the alphabet" was written immediately after the First Congress of Manastir, in which Parashqevi Qiriazi participated as the right hand of her brother Gjergj Qiriazi and, officially, as the secretary of the Alphabet Committee. This congress is honored today as one of the most important assemblies in the entire political and cultural history of the Albanian nation, not only for the unification of the alphabet, but also as a great step towards national and political unification (Tole, 2018).

Research Problem

For the historical treatment of Albanian music education and artistic life 1900 – 1950, this study will focus on how women have been under-represented in Albanian society. Although Paraskevi and Sevasti Kyrias, Jorgjia Truja, Maria Kraja, Lola Gjoka, Dhora Leka, were prominent female educators and musicians. The study aims to investigate the successes of these pioneering women, in order to present a broader picture of Albanian music history. In doing this, it highlights the necessity for gender diversity within music education and its cultural legacy. The research problem of this study is relevant to the gaps in the field of Albanian music education and education history, and focuses on the contributions of women music educators and artists in Albania from 1900 to 1950.

Method

Research Model

For this research is used qualitative (descriptive) method. Apart from literature review, this study employed document analysis methods (archival documents – music as well) and consulted existing research by some other scholars. Photographs, samples of old music works, are used for illustration purposes of music educatos, artists who lived and created and performed in this period. The examination of the literature surrounding the historical context of music, its educational impact, and its social implications forms the basis for this discussion.

Historical research method "attempts to systematically recapture the complex nuances, the people, meanings, events, and even ideas of the past that have influenced and shaped the present" (Berg & Lure, 2012, p.305)

Specifically, the contribution of women music educators for music education and artistic music life in Albania. Vocal first steps of vocal pedagogy, choir and teaching in instrument is described by historical research, offering academic support for later analysis.

Documentary analysis is a systematic procedure for reviewing or evaluating documents. (Bowen, 2009), The Development of music education in Institute is studied by documentary analysis in this article. The document issued by the Albanian National Archive, Albanian Ministry of Education and the research materials on National Library and personal Archives of Artist Jorgjia Truja

Jorgjia Truja (Lyric Singer) the first music teacher in first half of XX Century in Institution "Mother Queen" "Nana Mbretneshë" (1933-1945)

The Feminine Institute "Mother Queen" "Nana Mbretneshë" (2 October 1933-1945) was conceived and founded by Mirash Ivanaj, Minister of Education in those years, and branched into two profiles, high school "Gymnasial" and Normal school. Through this second direction, the Institute of The Institute includes the pedagogical profile after the Normal School the Female School of Korca City and the Kyrias Institute. It is also in this regard that the similarities of the programs and the important place that music is occupied in both schools. This fact, in one way or another, is proven by almost all the archival documents preserved by

the Institute, but in even more direct form we find it reflected in the 1935 school curriculum and schedule, in which, for the first time, music is encountered according to profiles (gymnasially and normally). While, in the book History of Albanian education and religious thought this subdivision has been seen since the opening of the Institute in 1933. (Kraja, 2012, p. 476) From the Royal Institute of Music, the school "Mother Queen" inherited for a period of two years a considerable base of musical instruments. This evidence comes from a document included in the fund of the Institute "Mother Queen", which states: Technical Institute dt. 1.II.935 When the clothes of the Femnuer Institute are transported from the Naim Frashëri building among the new premises, along with them are transported and the musical instruments of the former Institute and today are in the Feminine Institute; Minister Mirash Ivanaj (Central State Archive, F. 387, D. 17, year 1935, pp.1,2)

Jorgjia Fiçe Truja and the development of vocal pedagogy (Vocal pedagogy and its roots in public feminnine Institution (1933-1942)

Picture 1. Jorgjia Filçe Truja (20 January 1907 – 22 June 1994) (Web 1)

Lyric singer, pedagogue, conductor, musicologist, and a remarkable woman like Jorgjia Filçe Truja represents a complexity of exceptional professional and human values. A powerful asset, with which she dedicated herself to her profession, Truja became an initiator for the emancipation of young Albanian artists who, through their interpretation of masterpieces of operatic musical art, would influence the cultivation of aesthetic taste and the social emancipation of the Albanian state. From a historical perspective, in addition to being a prominent artist, Jorgjia Filçe Truja is among the artistic personalities who laid the first foundation stones in the history of music as part of professional Albanian art. The artist's recent contributions to the "Nana Mbretneshë Institute" align with her artistic-pedagogical profile for the development of music education as a necessary component of general education. Jorgjia Truja has also made significant contributions in the musicological field, enriching it with numerous articles addressing issues of education and the development of art in both educational and social contexts. She is recognized as one of the first contributors to the history of theoretical and musicological thought in Albania. Ms. Filçe created a school choir with students from all grades, establishing a tradition in Albanian choral interpretation, featuring a patriotic repertoire of choral songs from various operas, all translated into Albanian. Singing became a phenomenon for these girls, starting in the classrooms, continuing in the basements and dormitories, and culminating on stage, where they nurtured their talents and transformed it into large-scale performances that deeply resonated with the audience. Regarding the teaching and music subjects at the Institute, we can only judge based on the preserved documents, occasional studies, or the memories recounted or written by students or teachers from those years. Music Education education at this Institute was complete, solfege was taught, which was divided into theoretical and practical classes, as well as the choir, which was a very valuable exercise. It is precisely with the creation of this choir that the beginning of the beautiful tradition of end-of-year concerts, where school holidays were organized, is connected (Bihiku, 1989).

In 1933, the Minister of Education, Mirash Ivanaj, propose to Ms. Filçe to design music programs for all Albanian schools, including the Feminine Institute, the Normal School and the secondary cycle of high schools in general. This data sheds light on the name of the drafter of the Music curriculum in the Ministry of Education, but it is not known if these programs built in 1933 by J. Filçe continued until 1939, since the name of the drafter of the latter is not found in any document. In the book "Muza e pare" [The First Muse]", (Tole & Truja, 2014) through the memories of the young teacher Jorgjia Filçe Truja, the preoccupation that she had for the task that was assigned to her as a program designer, expressed with the effort to recognize and use the didactic experiences of contemporary Western Italian, is proven. programs of normal schools as well as those of master's and high school. To create the programs Ms. Filçe was thanking her husband for sending her Schinelli's[1] didactic musical methods, but in the meantime, as she says, she had also brought with herself other methods, mainly canto, Truja she bought different pedagogical methods for choral singing in the warehouse and started browsing them. From a careful inspection of the covers of these books, it is understood that their content does not represent a mere arrangement of musical parts, but more than that, an advanced theoretical treatment of teaching methods, of professional work with the vocal tract of the production of to the human voice in chorus An example of this would be Filçe's provision and use of Carlo Certo's methodical publication, with instructions and details on the vocal cords, larynx, epiglottis, nose, trachea, lungs and diaphragm. This fact takes special importance not only because it speaks of the application of professional methods in the teaching of music that was developed at the Institute, but especially because it paved the way for the rise of vocal pedagogy in Albania. Bearing this issue in mind, it can be seen that from the Italian publication Songs for elementary courses of any order by Carlo Certo, in the books kept in the Truja family, the songs included in the school repertoire are underlined, but for the year of concretization of these songs in Institute we have no data.Some of them are: "*Dove Vai", "Le Rondini" "Lo Specio" "La Nespola" "Il Circolo" "Tempo Scipato" "A Mosca Scieca*" (gioco). In the case of the song "*Le Rondini*" it is noted at the top of the page that its melody will be sung in Albanian with the text of Filip Shiroka's poem "*Udh e mbarë se erdh pranvera": "Shko dallendyshe tue fluturue prej Misiri n'dhena tjera fusha e male tue kërkue; n'Shqypni shko, pra, fluturim, shko në Shkodër, n'gjytet tim*. [Go, awallow, fly away from Egypt to other lands, fields and mountains, you are looking for; Go to Albania, fly, go to Shkodër, to my Country] In the musical score, this text is placed below the notes alongside the Italian text. The use of Albanian texts, besides serving the purpose of musical education, also contributed to enriching the repertoire of school songs. The songs marked by teacher J. Filçe in the aforementioned book are presented with a simple structure; for example, the song "*Dove Vai*" consists of two symmetrical phrases, where the first phrase (a+b) cadences on an incomplete tonic, while the second phrase (a1+b1) has two additional cadential measures to conclude with a complete cadence. Their melody moves within the intervals of major seconds, minor thirds, and occasionally ascends to a pure fifth. In keeping with the simplicity of the song, the singer's range is within the limit of a seventh. "*Il Circolo*" is a song with professionally demanding requirements, structured in a verse-chorus format based on the principle of contrast, with a range extending up to the eleventh, agile rhythmic figures, and a cheerful character. The scores of the songs are equipped with an accompanying part, primarily in function of supporting the harmonic line of the vocal part, moving within the primary functions of the tonality: T [tonic], D [dominant], and S [subdominant].

[1] Schinelli, Achilles. Theory and practice of choral singing. (1892-1969. Composer of operettas, author of 8 volumes.)

The arrangement of songs in the book used by Ms. Filçe also takes into account the increasing level of difficulty through a gradual transition from one tonality to another. In addition, it appears that the development of interpretative sensitivity also holds an important place in musical education, through the recognition of dynamic markings such as staccato, legato, etc.

Undoubtedly, singing remains the simplest and most fruitful form for teaching music throughout the entire Albanian educational system, from the Albanian school primers to the "Nana Mbretneshë" Institute. Usually, the songs were sung not only in class but also in choral groups, aiming for public performances. By the third decade of the century, relatively difficult vocal pieces extracted from genres such as operetta and opera would be added to this repertoire at the "Nana Mbretneshë" Institute. Through their interpretation, the Institute aimed for the further development of both solo singing practice and choral singing.

It is understood that the first music teacher at the Institute, Ms. Jorgjia Filçe, alongside musical education, persistently aimed to cultivate a tradition of sophisticated school singing, taking a new and bold step in the development of vocal pedagogy in Albanian schools of the time. It must also be asserted that this was a significant qualitative leap for the Institute, as J. Filçe consistently demonstrated a clear goal of referring to the tradition of Italian Bel canto in her teaching, thus becoming the first teacher of vocal pedagogy in Albanian schools. During her years at the "Nana Mbretneshë" Institute, she accomplished this mission with the support of two essential pillars: 1) the use of professional pedagogical methods, and 2) the concretization of musical expressions to enhance interpretative skills in artistic activities, sometimes alongside professional artists.

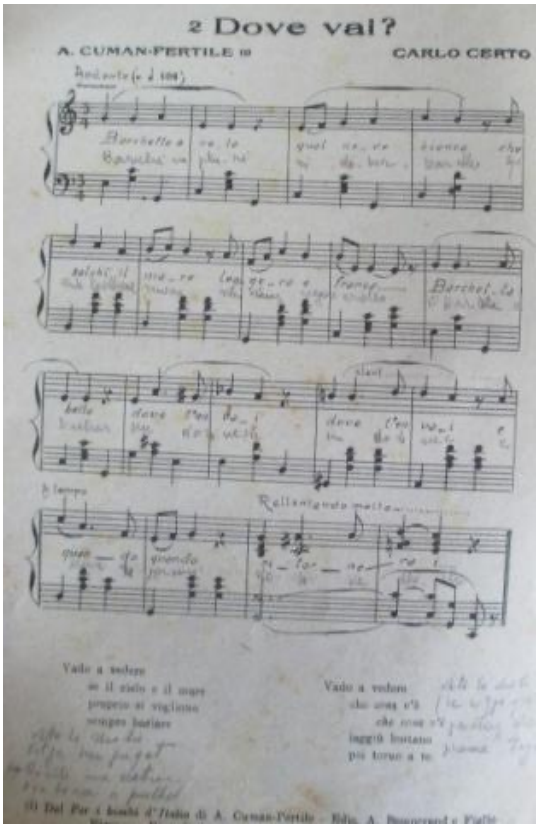
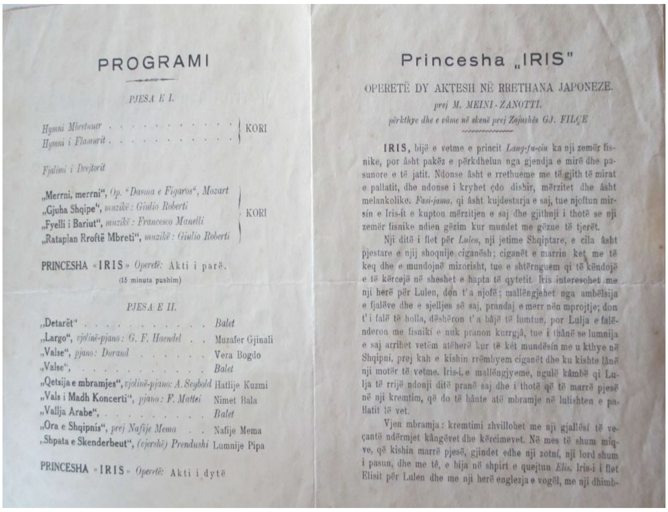


Figure 2. Example of lessons in "Mother Queen" Institute, Italian Song Dove Vai used with Albanian translation in Feminine Institute (Personal Archive Jorgjia Truja)[2]

[2] The book is from Italian composer C.Certo. Certo,Carlo Musica e Canto Corale, Antonio Vallardi 1931 Personal Archive from Family of Jorgjia Truja, Her girl, the pianist Takuina Truja has me all the sources of family archive the book is from author Certo C., Musica e Canto Corale. Music and Choral Singing. Lessons for use by RR. Lower and Upper Teacher Training Institutes



PROGRAMI

PJESA E I.

Hymni Mbretnuer . . . . KORI
Hymni i Flamurit . . . .

Fjalimi i Drejtorit

„Merrni, merrni", Op. "Dasma e Figaros", Mozart
„Gjuha Shqipe", muzikë: Giulio Roberti
„Fyelli i Bariut", muzikë: Francesco Manelli
„Rataplan Rroftë Mbreti", muzikë: Giulio Roberti
KORI

PRINCESHA «IRIS» Operetë: Akti i parë.
(15 minuta pushim)

PJESA E II.

„Detarët"	Balet
„Largo", vjolinë-pjano: G. F. Haendel . .	Muzafer Gjinali
„Valse", pjano: Durand	Vera Bogdo
„Valse", ...	Balet
„Qetsija e mbramjes", vjolinë-pjano: A. Seybold	Hatlije Kuzmi
„Vals i Madh Koncerti", pjano: F. Mattei	Nimet Bala
„Vallja Arabe", ...	Balet
„Ora e Shqipnís", prej Nafije Mema . .	Nafije Mema
„Shpata e Skenderbeut", (vjershë) Prendushi	Lumnije Pipa

PRINCESHA «IRIS» Operetë: Akti i dytë

Princesha „IRIS"

OPERETË DY AKTESH NË RRETHANA JAPONEZE.
prej M. MEINI-ZANOTTI.
përkthye dhe e vûme në skenë prej Zojushës GJ. FILÇE

IRIS, bijë e vetme e princit *Lang-fu-ciu* ka nji zemër fisnike, por âsht pakëz e përkdhelun nga gjendja e mirë dhe pasunore e të jatit. Ndonse âsht e rrethueme me të gjith të mirat e pallatit, dhe ndonse i kryhet çdo dishir, mërzitet dhe âsht melankolike. *Fasi-jama*, qi âsht kujdestarja e saj, tue njoftun mirsín e Iris-it e kupton mërzitjen e saj dhe gjithnji i thotë se nji zemër fisnike ndien gëzim kur mundet me gëzue të tjerët.

Nji ditë i flet për *Lulen*, nji jetime Shqiptare, e cila âsht pjestare e njij shoqnije ciganësh; ciganët e marrin ket me të keq dhe e mundojnë mizorisht, tue e shtërnguem qi të këndojë e të kërcejë në sheshet e hapta të qytetit. Iris interesohet me nji herë për Lulen, don t'a njofë; mallëngjehet nga ambëlsija e fjalëve dhe e sjelljes së saj, prandaj e merr nën mprojtje; don t'i falë të holla, dëshëron t'a bâjë të lumtun, por Lulja e falënderon me fisnikí e nuk pranon kurrgjâ, tue i thânë se lumnija e saj arrihet vetëm atëherë kur të ketë mundësín me u kthye në Shqipní, prej kah e kishin rrëmbyem ciganët dhe ku kishte lânë nji motër të vetme. Iris-i, e mallëngjyeme, ngulë kâmbë qi Lulja të rrijë ndonji ditë pranë saj dhe i thotë që të marrë pjesë në nji kremtim, që do të bânte atë mbramje në lulishten e pallatit të vet.

Vjen mbramja: kremtimi zhvillohet me nji gjallësí të veçantë ndërmjet kângëvet dhe kërcimevet. Në mes të shum miqve, që kishin marrë pjesë, gjindet edhe nji zotní, nji lord shum i pasun, dhe me të, e bija në shpirt e quejtun *Elis*. Iris-i i flet Elisit për Lulen dhe me nji herë englezja e vogël, me nji dhimb-

Figure 3. Opereta in two actes *"Princes Iris"* (Pesonal Archive Jorgjia Truja[3])

Thus, by working outside the curriculum, the music teachers and voice trainer Jorgjia Filçe created the school choir with students from all grades, thereby establishing a valuable tradition in the direction of Albanian choral interpretation. They sang patriotic songs and choral pieces from various operas, all in Albanian. Singing became a phenomenon for these girls, initiated by Jorgjia, starting in the classrooms, continuing in the basements and dormitories, and culminating on stage, where they nurtured it, transforming it into massive performances that resonated deeply with the soul of the people. (Stringa, 2006). From a quick overview of the contents of this concert program, there are several elements that stand out impressively. First and foremost, it is commendable that, after only three years of studying music, the students were able to meet significant artistic demands arising from the prepared program. In addition to singing choral hymns, they could perform on stage as vocal or instrumental soloists (including piano and violin) with parts from the classical repertoire of composers such as Handel and Mozart. Secondly, it is worth highlighting the broad scope of activity across several fields. Beyond choral and solo singing, the program included instrumental performances, even in the most complex technical and musical genres. The operetta was emphasized as a notable component. Equally important is the inclusion of two ballet numbers in the program, a fact that undoubtedly holds double interest.[4] As we understand, the establishment of a ballet **ensemble** at the "Nana Mbretneshë" Institute by Lola Gjoka marks one of the first efforts of its kind in the history of Albanian choreographic art. More significantly, this development reflects the evolution occurring within Albanian society at the time.

Figure 4. The students of Institute "Mother Queen" 1938[5]

[3] Ibidem poster kept in the family Truja, Programme invitation
[4] Personal Found Archive of Jorgjia Truja
[5] Central State Archive, F.387.f.8.1938

Table 1. Created by the Information from National State Archive Albania[6]

Grades	Music J. Truja	Violine Anny Marashi
First grade 2 classes	4 hours	1 hour
Second 3 Classes	6 hours	3 hours
Third one class	1 hour	2 hours
Fourth 2 Classes	2 hours	4 hours
Fifth 2 Classes	2 hours	4 hours
Sixth 2 Classes	2 hours	2hours
Seventh 2 Classes	2 hours	2 hours
Eighth 2 Classes	2 hours	2 hours

From the graphic and the table in differenct years creatied from the document recived from archive in years 1933-1939 We see that from 1933 until 1939 in the propotion of women to man at the Feminine Institution Mother Queen in the first half of 20th century shows that the music teachers are women ad dominate and we can say that they are the founders of musical education. The music teachers were Jorgjia Filçe for Music and Song, Maria Paluca for Music and song, Lola Fjoka for piano and piano accompagnement, Anny Marashi violin, and Ahmet Gashi violin Music education reflected the overall feminization of the teaching profession during the latter part of the 19th century when most public school music was taught by elemen-tary classroom teachers, most of whom were women,and supervised by music special-ists ,most of whom originally were men (Birge, 1928)

Jorgjia Truja and her contribution for the development of womens music-artistic life in Albania

In 1939, the fascist aggression of the country, despite the extremely tense situation that the Albanian society was going through, Mrs. Filçe did not stop her mission as a prominent activist of the country's artistic life. In the fall of that year, she prepared the "Artistic Festival of the Albanian Woman", (Tole & Truja, 2014) which was held in the "Gloria" cinema hall on Sunday, April 2, 1939.

As the main organizer of this first major artistic manifestation of Albanian women, J. Filçe was simultaneously the artistic leader, conductor and director. In addition to professional artists, such as singers Maria Kraja and Tefta Tashko Koço, pianists Lola Aleksi and Tonin Guraziu, and these teachers at "Nana Mbretneshë", [Mother Queen] she also included the girls of the Institute in the program.

Most of the numbers included in the artistic content of the Festival refer to the figure of the woman, her feelings and spiritual world, the discriminated position in society, etc. Both main lines of the selected repertoire adhere to this, on the one hand the operatic arias of Butterfly, Manon Lescau (Puccini) or Lucia di Lammermoor (Donizzetti) and, on the other hand, Albanian folk songs. Regarding the latter, in addition to the materials (songs) performed by Tefta Tashko Koço and Maria Kraja, the presented program brings an almost new experience or very little studied in the Albanian music of the time, the harmonization of popular songs for a capella choir, placed as a separate group under the designation "*Këngë Pleqërishte*" [Old people's song] (in the sense of old Albanian folk songs) and performed by the choir of the students of the Institute under the direction of J. Filçe, at the same time harmonizing the songs.

[6] National State Archive, Found.387, File, 35, year 1942, pp. 1.

Lola Gjoka Aleksi (22 May 1910 – 6 October 1985) music educator, pianist in "Mother Queen" Institute

Picture 2. Lola Gjoka Aleksi (1910-1985) (Web 2)

Lola Aleksi was back in her homeland in 1932. The first concert she gave together with singer Jorgjii Filçe, Llambi Turtulli and violinist Thoma Bezhani that same year in Korça, she focused the attention of the citizens of Korça around her. In 1934, Lola Aleksi would come to Tirana to be employed at the female high school "Nana Mbretneshë".

As mentioned above, during the first two years of its existence, the female school "Nana Mbretneshë" used the instruments purchased for the Royal Institute of Music.

From a record kept on 21.VII.1934 at 9 p.m., the commission is sent by the Minister of Education under the chairmanship of the Deputy Director of the "Nana Mbretneshë" Feminine Institute, Mr. Ahmet Gashi, it is stated that three pianofortes were left in the corridor in front of the director's room. The latter had a dual function in the realization of the educational programs: 1) for piano lessons as part of the music curriculum; and 2) for accompanying vocal lessons (soloist or choral).

This fact has a great significance in itself, if we keep in mind the way the music subject is organized in other similar schools in the country. The piano was not only taught as an instrument, but also used to support the teaching process (for the choir and soloists). And, moreover, a newly opened school used three such instruments, which shows that the Institute from its beginnings was incorporating well-known elements of professional music schools both in terms of method and in terms of organization lesson time. And the results of all this would be reflected very quickly in the artistic life that the school would develop (Stringa, 2013).

Maria Kraja: Opera Singer (music educator)

Picture 3. Maria Kraja (1911-1999) (Web 3)

From the documents found in the Central State Archive, it is proven that the number of piano lessons (from 24hours to 28 hours), singing lessons (from 31 hours to 35 hours), and violin lessons (from 20 hours to 28 hours) has increased, and that the pedagogical staff for musical subjects included the soprano Maria Kraja.

According to the author Spiro Ll.Kalemi in the monoghraph "Maria Kraja" the singer worked in Radio Tirana as a music editor from 1945-1946 . She was a compiler of programs, and also served as a trainer, teaching the singers club while she began to develop her career as a singer as performer. In October 1948, the Arts Committee invited her to participate in the group of artists organized near the People's Theater in Tirana, to start a very busy work period, she performed the first songs dedicated to the homeland, the war, the country's reconstruction. With the cessation of activity and the death of Tefta Tashko Koço and her husband Kristaq Koço,

the early group of lyrical artists dimished; At the same time the demond for concert performancees increased along with the responsibility of the artists. Together with Jorgjia Filçe Truja and Gjuzepina Kosturi Maria sang for an eager audience, often young and less experienced, but they honored the artists with the sincere and genuine love (Kalemi, 2001).

She was a compiler of programs and also served as a trainer, teaching at the singers' club while she began to develop her career as a performer. In October 1948, the Arts Committee invited her to join a group of artists organized at the People's Theater in Tirana, marking the beginning of a very busy work period for her. During this time, she performed her first songs dedicated to the homeland, the war, and the country's reconstruction.

With the cessation of activities and the death of Tefta Tashko Koço and her husband Kristaq Koço, the early group of lyrical artists diminished. At the same time, the demand for concert performances increased, along with the artists' responsibilities. Alongside Jorgji Filçe Trujës and Gjuzepina Kosturi, Maria sang for an eager audience—often young and less experienced—but they honored the artists with sincere reactions and genuine love.

Dhora Leka: the first Albanian woman composer (1923 - 2006)

Picture 4. Dhora Leka[7]

[7] Tole, V. (2024). Dhora Leka: The first composer. Tirana.

Dhora Leka was student of Jorgja Truje at the "Mother Queen" Institute, where she developed her skills in culture, music, acting, and dancing. She initially worked at Radio Tirana. Eventually, as a music specialist with professional education, she was sent abroad to study composition. She first attended the Leningrad Conservatory, and for health reasons, she later transferred to the Pyotr Ilyich Tchaikovsky Conservatory, where she trained as a professional composer from 1948 to 1953.

During her studies at the Tchaikovsky Conservatory, her musical creations were included in the performance programs. At the end of her studies in 1953, she composed the "Overture on Two Popular Themes" for choir and symphonic orchestra, as well as the cantata "Albania, My Homeland," a work that was performed by the choir and orchestra of Radio Moscow on her graduation day in 1953.

In 1939, during the Italian invasion of Albania, Dhora Leka was heavily engaged in promoting nationalistic sentiments. While she was a student at the Nana Mbretneshe Institute, she and several other girls turned the school's theater performance on April 7, 1939 into a patriotic protest in front of the royal palace singing songs. Despite being active in the Albanian Communist Youth, she had been expelled from the Institute when then but returned in 1942.

Between 1942 and 1944, Dhora Leka fought as a partisan against fascist and Nazi invaders, while also composing her own patriotic lyrics. Albania was liberated on November 28, 1944 by the victorious partisans marching in Tirana and singing the songs of Dhora Leka.

On November 29, 1944, in the hall of the National Theater, the partisan choir, led by conductor Konstandin Trako, performed Dhora Leka's partisan songs for the first time in liberated Albania. In 1946, several of her partisan songs were published for the first time, including in the publication *Hymns and Partisan Songs*, which was harmonized by Kristo Kono. This publication was prepared

by the Ministry of Press, Propaganda, and Popular Culture. Dhora Leka, who returned to Albania after her studies in 1953, worked as secretary of music in the League of Writers & Artists and later as a lecturer at the Artistic High School in Tirana teaching harmony and musical literature among others. She wrote in most of the genres during the years 1954-1957 other notable realisations being "Idle" (1954), a musical comedy for children, to Kol Jakova's writings; This Song You Sing (1954); and I Sing For You (1954). (Tole,2024)

The activities directed by the music teacher artists (Jorgjia Truja, Maria Kraja, Lola Aleksi) at the "Nana Mbretneshë" Institute in Tirana in the years 1935-1940:

In the year 1935, the newspaper 'Besa' wrote with admiration about the 'Concert of the Girls' Choir of the Institute,' which performed the Anthem of the King and the Anthem of the Flag. In 1936-1937, at the end of the school year, after the performance of the two-act comedy *'The Bowl of Diogenes,'* a choir concert followed. The repertoire included songs such as *'Take, take,'* from the opera *'The Marriage of Figaro,'* and *'The Shepherd's Flute'* by Francesco Manelli, among others

"In 1936-1937, the operetta 'Princess Iris' was staged, which was performed in the dormitory hall of the Institute. It was a successful product of the artistic collaboration between Jorgjia Truja, who translated the text and served as the director and vocal leader of the girls; Lola Aleksi, who accompanied the operetta on the piano and led the ballet troupe; and Sokrat Mihos, who was the stage decorator. On November 28, 1938, during the inauguration of Radio-Tirana, the choir of the Institute— the only three-voice choir in the city of Tirana— sang the Anthem of the Flag.

In 1937-1938, 'Festa e Gjyshes,' an operetta defined in the manuscripts of J. Truja as an 'Operetta with one act for Institutes and Colleges of Education,' was developed (Tole & Truja, 2014, p. 124).

In March-April 1939, J. Filçe Truja prepared the 'Albanian Women's Artistic Festival,' which was held in the 'Gloria' cinema hall. She served as the artistic leader, conductor, and director. In organizing the program, she included the girls and soloist professors of the Institute, such as soprano Marije Kraja, pianist Lola Aleksi, soprano Tefta Tashko, and pianist Tonin Guraziu, featuring popular songs titled '*Pleqëriste*,' a cappella harmonized by J. Truja and interwoven with the poem *'Hanko Halla'* by the poet Ali Asllani. The festival was very successful and received enthusiastic coverage in the press of the time ('Drita,' April 2, 1939)."

1940. Concert tour in Bari, Naples and Rome with the girls, with Marie Kraja, Jorgjie Truja and Lola Aleksi.

It is enough to single out the staging of a work of the stage genre, such as the operetta *"Iris",* from the above programs, to understand that the teaching of music at the Nana Mbretneşe Women's Institute was not only very advanced, but completely effective in terms of coping of the demands of the artistic life. This complex performance proved the complete musical artistic formation of the girls of the Institute, being at the same time a brave undertaking, since the students were not in a professional music school, and in addition, a fair imposition, melodious sounds and intonation precision were reflected (Diana, 1936).

All this intensive and dedicated work aimed to ensure a healthy tradition of musical education for future female teachers, but mostly it served as a cultural hearth that enlivened the artistic life, clearly evidencing the talents that would follow further studies in the arts.

In conclusion, it should be emphasized that the stage artistic experience gained within a few years by the students of the "Mother Queen" [Nana Mbretneshë], Institute, demonstrated the effectiveness of music education developed in the teaching process. At a time when Albania had not

yet managed to establish a tradition with a genuine professional orientation in music education, the training of young students to respond to the needs of the artistic life can be said to have somewhat fulfilled the known deficiencies in this regard. In addition, from the classrooms of the Nana Mbretneshë Institute, several future musicians and music teachers initiated their professional paths, such as Viktori Xhaçka, who pursued studies in singing in Italy, or pianists Zana Bogdo and Vasilika Petrela, who were among the first piano teachers in the professional music system established after World War II.

Conclusion and Discussion

The period following Independence, particularly after the 1930s, saw the emergence of new trends in two key areas: Firstly, artistic life transitioned towards a fully professionalized model. Secondly, there was a notable leap in the quality of performances. Albanian musical artistic life during this period was primarily organized through individual initiatives within the framework of artistic societies. Upon returning to their homeland, a constellation of talented musicians—graduates of prestigious Western European institutions, instrumentalists and lyrical singers who had gained recognition on prestigious foreign stages—became promoters of a more active musical cultural movement. This movement infused artistic life in the country with a new vibrancy, both in quantity and quality, fostering a climate that aligned with European professional standards. Numerous tours, often held on improvised stages, were organized as private initiatives across the country. These tours showcased a diverse repertoire, including interpretations of patriotic and civic Albanian songs, arias from world operatic masterpieces, and works by classical and romantic composers. Sopranos Marie Kraja (1911-1999), People's Artist; Tefta Tashko Koço (1910-1947), People's Artist; Gjyzepina Kosturi (1912-1985), Merited Artist; Jorgji Truja (1909-1994), People's Artist; and tenor Kristaq Antoniu (1907-1979), People's Artist, are considered pioneers in establishing Albania's tradition of operatic lyric art. Their contributions are still celebrated, and they are revered figures in Albanian national culture. Pianists Lola Gjoka (1910-1985) and Tonin Guraziu (1908-1999) were the first soloists on the pianoforte, giving recital concerts that became major events of the time. Their roles were equally significant as concertmasters accompanying lyrical artists and later in the fields of piano and vocal pedagogy. It's essential to acknowledge the multifaceted roles played by Jorgji Truja, Lola Gjoka, Marie Kraja, and Tonin Guraziu in the activities of the Nana Mbretneshë Institute, which was dedicated to the emancipation of Albanian women.The "Mother Queen" Institute was founded in October 1933, along with general lessons, it offered solfège theory for two hours a week, taught by Jorgjia Filçe, and violin lessons for two hours, taught by Anny Marashi. These individuals contributed to a broader social transformation, challenging repressed consciousness and outdated mentalities, fostering a love for musical art, and ultimately empowering individuals through music despite the lack of standardized textbooks, teacher Filçe, drawing on her Western experience, developed the programs herself, carefully selecting and organizing materials to meet the specific needs and levels of the students.However, there were ambitious efforts to establish musical education in Albanian schools, a symphony orchestra, and theaters, which received state support.

This article particularly strived to help identify the first professional woman musician in Albania and also highlight the specific problems which initially affected the delayed appearance of woman teacchers in recent years. In the Albanian education system, from the observed data, female singers who teach music attract the class audience with their voices, while also being successful as teachers. According to Carrie Leigh Page, and Dana Reason, a woman singer is acceptable because her body is an instrument, and making music is

an embodiment of her femininity. Stick an instrument in her hands or in front of her face, and it interrupts the impression of a woman as 'sexually available or maternally occupied.' According to Green, the role of composer (and, I would add, producer), the dux femina facti, the greatest challenge of all, because it places the woman in control and invites the audience to gaze upon the inner workings of her mind, disembodying the woman entirely (Page, 2018). In Albania women have been the founders of music education as well as for the creation of artistic education heritage to serve for the formation of young generation in schools as well as in the musical life of the country. The number of female music teachers who have contributed to the development of pre-professional and professional music education spans from the eight-year education system of that time to the university level. These were talented musicians who belonged to a generation filled with dreams and a passion for work, coming from Western European universities in the 1930s. Music teachers were involved not only in artistic life but also in the most important institutions of the country, starting from pre-professional music education to professional music education at the "Jordan Misja" Artistic School, the University of Arts, as well as in orchestras, choirs, and as soloists at the National Theater of Opera and Ballet. And precisely today, at the Artistic Lyceum and the Faculty of Music in Tirana, female music teachers make up a dominant number. These women immersed themselves in their musical careers with determination and dedication in Albanian schools and Albanian Institution. Through continued hard-work they developed impressive musical careers and carved out a position for professional women in music. The study results underscore how women helped to actively create the tradition of music education and artistic life in Albania between 1900 and 1950, playing key roles in developing a professionalized music scene that elevated performance quality. However, although the summary of these contributions is good, more critical reflection on what these findings mean for contemporary forms of music education and cultural practices in Albania would be advantageous.

Recommendations

Recommendations for Further Research

Hopefully, this study would help to start research of a bigger frame on the contribution of Women in Music Education in Albania, would serve as support by local and international researchers with the intent that it could be enhanced furthermore provide possibilities to shed light into many factors which acted as obstacles for its development but also those who enabled her permanence and enrichment. This paper address the historical contributions that women made to the field as a whole. In the future comparative music educators' studies of women from other Balkan countries in that period may also serve goal as socio-cultural impacts and inform current practices. The socio-cultural context of women in music education, including social norms and political movements that shaped the opportunities they experienced, should be found in curricula designed by educators. Influencing gender-sensitive teaching that acknowledges the contributions of women, and the creation of collaborative learning environments and mentorship programmes can motivate female musicians in the making. Furthermore, supporting community engagement initiatives and establishing accessible platforms for varied musical expressions can acknowledge woman's contributions to music. Engaging in comparative studies of women music educators across other Balkan countries can provide valuable insights that inspire innovative practices within Albanian music education. The study will be expanded in the future by comparing the role of women teachers of music education in the Balkans, mainly in Albania, Kosovo, Greece, and Serbia exploring the socio-cultural impacts of historical women educators on contemporary society through symposiums and discussions, fostering greater awareness.

Additionally, integrating an investigation of the intersections between music pedagogy and political/social movements into curricula can empower students to view music as a tool for activism. It is also crucial to implement gender-inclusive practices, advocate for equitable policies, and encourage research that links music education to broader social contexts. Women in Albania make up a large percentage of music teachers; published accounts of music education in Albanian-speaking countries should be enriched by the powerful contribution of women musicians in Albania as founders of pre-professional and professional music education. Finally, developing programs aimed at introducing young women and gender-diverse students to careers in music education can help cultivate a more inclusive and reflective educational environment. These recommendations collectively aim to nurture an educational landscape that honors the contributions of women and promotes gender diversity in music education. By doing so, we can promote further inquiry into the many overlapping fields between music pedagogy and social movements, as well as encourage policy recommendations.

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Research Article

Perceptual differences between AI and human compositions: the impact of musical factors and cultural background

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Abstract

The issues of what Artificial Intelligence (AI) can and cannot do in the field of music are among the important topics that both music researchers and AI experts are curious about. This study offers a significant analysis within the context of the growing role of AI technologies in music composition and their impact on creative processes. It contributes to the literature by positioning AI as a complementary tool to the composer's creativity and by enhancing the understanding of cultural adaptation processes. The study aims to identify the perceptual differences between AI and composer compositions, examine the musical and cultural foundations of these differences, and uncover the factors that influence the listener's experience. In the research design, a mixed-method approach was adopted, combining qualitative and quantitative research methods. In the quantitative phase, a double-blind experimental design was employed to ensure that participants evaluated composer and AI works impartially. In the qualitative phase, participants' opinions were gathered. The participants were 10 individuals aged between 19 and 25, with diverse cultural and educational backgrounds; 6 had received formal music education, while 4 were casual listeners. The data collection instruments included a structured interview form and the Assessment Scale for Perceptual Factors in Musical Works. During the research process, each participant evaluated two AI and two composer works in 20-minute standardized listening sessions. All listening sessions were conducted using professional audio equipment. The analysis revealed that composer works scored significantly higher than AI works across all categories ($p<.05$). Notable differences were observed, particularly in the categories of emotional depth ($\overline{X}_{composer} = 4.6$, $\overline{X}_{AI} = 3.1$) and memorability ($\overline{X}_{composer} = 4.4$, $\overline{X}_{AI} = 3.2$). The study concluded that composer works were more effective than AI compositions in terms of emotional depth, structural coherence, and cultural resonance. Additionally, cultural background and music education emerged as significant factors shaping perceptual differences. Future research should broaden the participant pool and incorporate neurocognitive data to facilitate a deeper understanding of perceptual mechanisms. Furthermore, the development of AI systems for use in music should include the integration of Transformer and RNN-based advanced learning models, the implementation of traditional music theory principles, the enhancement of emotional expressiveness, the improvement of cultural adaptation capacities, and the refinement of real-time interaction mechanisms.

Keywords

Artificial Intelligence, cultural effects, music composition, perceptual differences

Introduction

The discipline of musicology represents a broad academic field encompassing fundamental research areas such as cultural studies, structural analysis, harmony, composition, organology, and music technologies (Harper-Scott and Samson, 2021; Cook, 2020). Among these research domains, particularly the field of music technologies has undergone a notable evolution with the recent development of artificial intelligence (AI) applications. AI systems are already capable of simulating the human voice (Aylett et al., 2020) and modeling musical instrument acoustic properties (Schoner et al., 2020), stylistic transformations between different musical forms (Wang et al., 2019), and musical compositions with textual input (Huang et al., 2020). The dynamics of the post-pandemic period and very recent AI tech developments have brought the field of music technologies to the forefront of musicology research (Webster

and Mertens, 2022). As a result of this maturation process, "AI and music" focused studies proliferated in academic literature and institutional research projects. As a result, various ethical and aesthetic debates have arisen around the developments of AI-assisted music production (Sturm et al., 2019; Miranda, 2021). As researchers in musical-aural examination, there has been significant inquiry on variables related to musicology fundamental parameters of musical perception (Agres et al., 2021), sensory perception (Pearce and Wiggins, 2020), cognitive perception (Peretz et al., 2020), and social-conceptually (cultural representation) (Born and Devine, 2019) factors in AI-streams of music compositions. As a result, it moves to emphasise the need for cultural dynamics to be considered outside of technical paradigms (Clarke and Doffman, 2019). This study involves a systematic investigation of auditory differences between a professional composer-made piano piece versus the piano pieces generated by AI-based systems. The differences are explored through both musical parameters and cultural backgrounds that affect these differences, which makes implications for future compositional strategies. Theoretical Framework The theory underlying this research is an interdisciplinary perspective assessing music perception and its relevance to artificial intelligence (AI) and the creativity of the composer. Music perception includes cognitive and emotional processes that account for how people react to a musical stimulus (Greenberg et al., 2022). Therefore, two key terms need discussing for perceiving the audio and musical differences in AI- produced versus composer-made songs: AI Creativity and Musical Perceptual Difference and Cultural Framework.

AI Creativity includes originality and expressive power, as well as the intellectual processes involved in producing pieces of intellectual work typically attributed to composer thoughts (Cope, 1987,2003; Fernández and Vico, 2013). AI music is a simulation of these creative processes which emerges from things like data-based learning and style imitation (Laney and Collins, 2017). This leads to a rethink about creativity's definitions and metrics: "Which parts of creative processes could be mirrored by AI so that it can imitate composer works? becomes a more and more pressing issue.

Musical Perceptual Difference is based on individuals' cultural backgrounds, musical education, and experiences (Hong, 2022). The Cultural Framework in Music[1] suggests that composers' aesthetic judgments are shaped not only by technical characteristics of musical structures but also by cultural norms and contexts (Simonetta et al., 2022). The crucial point here is incorporating cultural compatibility theories (Dubnov et al., 2021) into this study's conceptual foundations to explain how Western and Eastern musical traditions differ in the perception of AI versus composer compositions.

Research on music perception (Giordano, 2011; Jones, 2010; Koelsch and Siebel, 2005; Leman and Maes, 2014; McDermott, 2004; Koelsch, 2005; Stevens, 2012; Tirovolas and Levitin, 2010), has comprehensively measured features like harmony (Stolzenburg, 2013), rhythm and melody (Daniel, 2016) within specific musical styles or cultures. However, AI-generated music faces unique challenges in emotional nuances and applications in creative composition tasks. The most significant challenge is their inability to adequately reflect emotional expressions (Camurri et al., 1999). Despite standardized coding schemes like nuance marks in piano works, AI remains insufficient in replicating the anthropomorphic expression and multidimensional emotion present in

[1] The Cultural Framework in music perception integrates aesthetic judgment with cultural norms and contextual understanding. This theoretical framework, as developed by Simonetta et al. (2022) and elaborated by Dubnov et al. (2021), demonstrates how cultural backgrounds fundamentally shape musical appreciation and interpretation, particularly when comparing AI-generated and human-composed works. Cultural factors extend beyond technical considerations to influence both creation and reception of musical compositions (Hong, 2022).

composer-written works. Their MIDI-based representations particularly result in limited nuanced expression, lacking the Composer's Touch[2] that emotionally engages with listeners.

The Fundamental Idea in this study is that listeners with different musical backgrounds and cultural experiences will demonstrate varying abilities in perceiving differences between AI-generated and composer-composed works. This difference indicates that understanding perceptual differences is vital for preserving musical traditions, regulating creative labor, and promoting cultural heritage. As AI's role in music grows, studies investigating its perceptual impact encourage interdisciplinary research and become necessary for preserving artistic authenticity. At this stage of the study, although the main area is technology and AI in musicology, it is beneficial to look at the musicological framework due to its relationship with culture.

Musicological Framework this study adopts both analytical and experimental approaches commonly used in musicology. The musicological framework is based on examining technical elements used in composition processes and evaluating their effects on listeners. From a musicological perspective, central examination of a work, culture, and individual can be explained through these basic musicological concepts:

Melodic Structure, drawing from Menninghaus and colleagues' (2018) work, can be conceptualized as a multi-layered organization shaped by conscious selection and combination of phonetic and prosodic elements, evaluated through quantitative measurements obtained from automatic correlations of syllable pitch and duration relationships, reflecting the mutual interaction between poetic metric order and musical melody, influencing composers' compositional preferences, and directly related to aesthetic perception. The repetition, complexity, and memorability of melodic structures used in composer and AI compositions are examined (Collins and Laney, 2017).

Harmonic Richness[3] has received notable academic attention in recent years, particularly from the perspective of psychophysical principles and their implications for understanding musical perception

A study of musical rhythmic structures as potential sources of juxtapositional perceptual interest and emotional interest. Dynamic movement: addressing the role of dynamic change on the dramatic effect of the work (Xia et al., 2020)

How music creates Emotion and Emotional Depth[4] is a staple academic interest in recent years; A deeply grounded desire in using music or understanding what makes music to sound appealing to a particular listener (Susino, 2015). This result aligns with our qualitative analysis of the musical expression by composer-composed works, which can deliver greater emotional depth than compositions generated by computers through AI (Ragot et al., 2020).

Cultural Implications are evaluated through their effects on perception, with tonal harmony and structural integrity in Western music, and modal flexibility and rhythmic complexity in Eastern music (Nettl, 2015). This helps understand the role of listeners' cultural origins in music perception.

Music Technology has important roles in revealing perceptual differences. These concepts are also necessary when

[2] Composer's Touch: Can be seen as the whole range of qualitative features that contribute to the individual identity of a composer, that reveal individual taste and artistry in the realization of a given piece of music (Beht and Drabkin, 1987).

[3] Harmonic Richness has received significant academic focus, especially in terms of psychophysical rules and its effects on musical perception (Yaozhu et al., 2019).

[4] Emotional Depth in musical composition encompasses the intricate layering of psychological resonance, cultural significance, and expressive sophistication that characterizes human-created works.

examining technical limitations and potential advantages of AI models (Webster, P. R., and Mertens, G. (2022). All these concepts provide an important context for musicological discussions evaluating AI's role in music (Fernández and Vico, 2013).

Related Literature

Work on perceptual differences between AI-generated and composer- created works explores AI capabilities and limitations in creative processes. Such studies encompass melodic qualities, neural network representations of music (Li et al., 2022), the connections between AI-driven models and the complice mechanisms of composers (Hernandez-Olivan and Beltrán, 2021), and the elements that distinguish between composer and machine art from an aesthetic framework (Samo and Highhouse, 2023). Such are being produced in ever-greater numbers to show how hard it is to tell AIgen works from compgenerated (Collins and Laney, 2017). For instance, Ferreira et al. (2023) that, on average, participants struggled to accurately identify AI-generated music. Preference has tended to work the other way, with art generated by a composer being preferred; this is mostly attributable to anthropocentric bias and the attitudes towards creativity (Hong et al., 2022). Dallas and Morreale (2020) concluded that including vocals or composer production in music generated by AI did not significantly enhance listeners' appreciation. This leads to important questions on authorship and copyright concerns with AI art (Deltorn and Macrez, 2018). It is all the more critical to confront these issues as AI questions traditional boundaries of creativity and intellectual property

Another major topic that is significant to this study is perceptual differences, and the role of creativity. Creativity happens by virtue of perceptual difference, while perceptual difference—central to understanding the psychological and cultural dimensions of creativity—shakes up our thinking about the difference between AI-generated and composer-made works. While psychological studies tend to attribute the experience of creativity to the rational insight of the composer, new evidence suggests that how creativity is experienced is mostly a cultural and context-dependent idyll. To take one example, neural network resolution learning models show that even when AI reaches technical parity with composer musicians, much of the way we evaluate creativity is grounded in composer culture. Simonetta et al. The perceptual gap between MIDI-based representations and live performances is among the key challenges (Seder & Masek, 2022) that AI tools face in rendering the artistic expressivenession4 embedded in the composercomposed works. In another study, Zhu et al. (2023) talked about AI's shortcomings in synthesizing holistic musical narratives, as well as generating new motifs.

The results of these studies demonstrate that AI systems excel at creating sophisticated compositions, but remain stuck in an eternal loop of replication, honing existing trends learned from historical data rather than pursuing novelty. One limitation that arises is the repetition of the same loop cycles over and over. Therefore, AI systems should be considered from a much broader cultural canvas, and avoid Texas roll (& roll) where the old paradigms still apply (Prabhakaran and Hutchinson 2022). Differences in perception of solo piano compositions, therefore, greatly rely on interpretation by AI but also on cultural backgrounds of the composers.

While thinking about cultural background, it helps to discuss the Evaluation Methodologies[5]: Subjective and Objective Approaches[6]. Xiong et al. (2023) suggest that methods for evaluating music composed by AI systems can be split into two categories. In general terms, subjective evaluations

[5] Evaluation methodologies used in musical perception and cultural studies include systematic and repeatable measurement methods (Greenberg et al., 2022).

[6] The use of both subjective and objective approaches in the assessment of musical experience provides a more holistic understanding (Simonetta et al., 2022).

assess listeners' emotional and aesthetic reactions, and objective evaluations are based on quantifiable parameters like harmony, rhythm, and structural unity. The researchers highlight the need more balanced integration of the two methods, which can help overcome intrinsic difficulties in capturing standardized subjective evaluations in other cultural and individual contexts.

An example of this well-rounded approach to education can be seen at the Juilliard School[7], which now incorporates musical analysis into their music education curriculum by stressing how to examine compositions from both technical and emotional angles. The framework benefits the theory of music perception in that it provides an intuitive platform to understand such distinctions, perhaps best exemplified in John Cage's "4'33" and its reception in Eastern versus Western audiences. The history of AI in music composition dates back to the 1950s and algorithmic procedures, employing stochastic methods and rule-based systems (Fernández and Vico, 2013; Roads, 1985). These initial methods set the stage for more sophisticated techniques such as neural networks, evolutionary algorithms, and transformer-based models. Research that is further developed on style mimicry and collaborative composition, systems which either imitate particular music or collaborate with composer composers (Cope, 1987; Stolyarov, 2019). Even with these advances, AI-generated compositions tend to fall short of the emotional depth and cultural nuance[8] found in compositions by human artists. Though AI can generate technically complex music, it lacks the intent and expressiveness that characterize composer creativity. This distinction underscores the need for cognitive processes to be integrated with machine learning algorithms to improve the authenticity and cultural significance of AI-generated music.

Furthermore, previous work illustrates a relationship between emotional responses to music with cultural dynamics (regarding how the cultural learned influences the emotional responses to music) and the fact AI compositions are more hailed as "technical" pieces chewed out by machine but lacking of the emotional qualities that characterizes composer pieces (Ragot et al., 2020). These cultural dynamics have presented the challenges AI music creation has to overcome to compose music that will appeal to a global audience. Overcoming these perceptual gaps with the help of cultural elements would be beneficial for the AI systems so that more composer-centric and culturally oriented compositions can be developed.

Cognitive and Behavioral Studies on AI and composers works are also relevant to the literature review research and information. The predominant focus of cognitive studies on how listeners tell the difference between AI and composer-composed works The works of composers are generally more preferred among younger participants in studies than AIgenerated works, but their specific ability to identify AIgenerated music is dependent on their cultural and educational backgrounds (Hong, 2022). It also discusses biases and preferences primarily through an emphasis on the creativity of the composers and the necessity of contextual and cultural understanding of the composition and reception of musical works.

Music training is also known to improve perceptual sensitivity to decorrelated compositional features such as harmonic cohesion (Shank et al., 2023). However, there are also individual differences, such as age and exposure to different musical traditions, which contribute to these perceptions. Insights into these signals of meaning can help AI deployed in creative spaces align with composer aesthetic norms more closely. Understanding these factors can guide us

[7] Juilliard School, established in 1905, is a prestigious music, dance, and drama conservatory with worldwide recognition (Ross, 2020).

[8] Cultural nuance" - presented as a distinguishing feature of human compositions

towards narrowing the void that exists between the artificial and human creativity in musical composition, while accounting for the multifaceted relationships of cultural, educational, and personal aspects that shape musical recognition and enjoyment.

Problem of Research

Exposing distinctions between AI and composer-composed pieces sheds light on an important dichotomy in music generation and reception, constituting our key focus here. These sends the implications of the AI role on the genre of music which further stresses the issue of creative processes and what it means to be a composer in contribuiring in creating music. By examining melodic complexity, harmonic richness, rhythmic variety, emotional impact, and cultural considerations, this article will thus advance understanding of music technology, cross-cultural studies, and music education. As such, it intends to write a guiding reference for the realization of artificial systems, along with the safeguarding of the worth of a composer creativity. In list of research questions, the research aims to investigate the degree to which people perceive and react to music composed by a human composer, in contrast to music that is generated using AI, including various musical parameters and wide range of musical genres from popular to high culture. As the paradigm of what makes something musically valuable is challenged by the evolution of AI, therefore this investigation is particularly relevant. The study also aims to emphasize human context in this dialogue, focusing on how perceptual and creative differences can impact the overall experience, in ways that may retain the value of human creativity despite the growing presence of technology.

The main problem of this study:

- Do musical factors and cultural diversities have an impact on perceptual differences between AI-generated and composer-made piano compositions?

Sub-problems of this research:

- Can participants distinguish AI-generated music from composer-made music?
- How do musical factors (e.g., timbre, motif, rhythm) influence recognition?
- Do cultural backgrounds and individual differences (e.g., musical education, age) affect recognition performance?

Method

Research Model

This study employs a descriptive research approach to investigate perceptual differences between AI-generated and composer-made piano music. The primary goal is to understand how listeners distinguish between these two types of compositions, identify musical elements (e.g., timbre, motif, rhythm) affecting their perceptions, and evaluate how cultural backgrounds, music education, and individual differences shape these processes. It has adopted a descriptive and experimental research approach to examine perceptual differences between composer-composed works and AI-generated piano music.

This research has adopted a comprehensive research model that combines experimental, descriptive, and mixed methods to examine perceptual differences between composer-composed music and artificial intelligence-generated music. In the study, bias was minimized by ensuring that participants did not know whether the pieces they listened to were composed by a composer or artificial intelligence. Composer and artificial intelligence works were matched in terms of tonality, tempo, and style for fair comparison.

The research model is based on a mixed-method approach incorporating both qualitative and quantitative data collection and analysis methods.

Participants

The participant group consists of 10 individuals representing different cultural, educational, and experiential perspectives. A total of 17 participants were involved in the study. It was observed that 7 out of the 17 individuals did not respond carefully to the questions in the listening sessions due to data security concerns. Therefore, the analysis covers the 10 individuals who participated. The characteristics of individuals whose data were evaluated are presented in Table 1. For qualitative research quotations, participants were coded in the format Participant No-Age-Gender. For example: P1-22-F.

Table 1. Participant characteristics and codes

No	Age	Gender	CBG	MEL	Notes	Codes
1	22	Female	West	Advanced	Conservatory student, piano expertise	P1-22-F
2	19	Male	Asia	Intermediate	Conservatory student, piano expertise	P2-19-F
3	22	Female	West	Beginner	Conservatory student, piano expertise	P3-22-F
4	19	Male	West	No Education	Regular classical music listener	P4-19-M
5	20	Female	West	Advanced	Has classical music performance background	P5-20-F
6	24	Male	East	Intermediate	Familiar with traditional rhythms	P6-24-M
7	25	Female	West	No Education	Interested in traditional music	P7-25-F
8	19	Male	Asia	Beginner	Plays instrument as hobby	P8-19-M
9	23	Female	East	Advanced	Modern and classical music education	P9-23-F
10	20	Male	West	No Education	Interested in film music	P10-20-M

CBG: Cultural Background **MEL**: Music Education Level

Age Range; representing young and middle-age groups between 19 and 25 years old, aimed at exploring generational differences in musical perception. A balanced gender distribution was ensured to maintain diversity.

Music Education; 6 participants have received formal music education ranging from beginner to advanced level. 4 participants have not received formal education but are frequent listeners exposed to various genres.

Cultural Background; selected from Western and non-Western cultural contexts to provide a cross-cultural perspective on music perception. Western- Eastern Participants are considered based on Cultural Framework. This refers to participants who are "familiar with Western music tradition" and "familiar with Traditional Turkish/Eastern music tradition" and "interested in European music forms" and "interested in Anatolian music culture", "interested in Far Eastern (Asian) music culture".

Exclusion Criteria; the study excluded professional composers to focus on general listener perceptions and ensure findings reflect the experiences of non-expert participants, consisting only of students with music education.

Selection Rationale; the participant pool was designed to examine how individual differences (e.g., music education and cultural background) influence the perception and evaluation of musical elements such as timbre, rhythm, motif, and emotional impact.

Data Collection Tools

Semi-structured Interview Form

The Semi-structured Interview Form was developed by the researcher to identify perceptual differences between AI generated music and composer-made music, the musical and cultural foundations of these differences, and factors affecting listener experience. The final version of the form

was completed after obtaining opinions from two experts on the draft interview form. The Semi-structured Interview Form consists of 7 open-ended questions (See Appendix 1). For example, the question "Do you think the piece you listened to was composer-made or generated by artificial intelligence? What are the distinctive features that formed this opinion?" aims to understand how participants evaluate musical perception processes and distinguishing characteristics.

Assessment Scale for Perceptual Factors in Musical Works

This scale was prepared to evaluate factors perceived by the listener in a musical work (melodic complexity, harmonic richness, rhythmic variety, emotional depth, and memorability) (See Appendix 3). The scale is a 5-point Likert type, ranging from Very Low (1 point), Low (2 points), Normal (3 points), High (4 points), to Very High (5 points).

Data Analysis

Analysis of Qualitative Data

In the research, opinions obtained through the semi-structured interview form were subjected to content analysis. Direct quotations from participants' views were presented using coding to support the quantitative data findings. Qualitative data obtained from participants' responses to open-ended questions and focus group discussions were examined using thematic analysis. During thematic coding, participant views were classified around specific themes. For example, Melodic complexity highlighted the theme that composer compositions were balanced and memorable; while AI compositions were either too simple or unnecessarily complex. Additionally, regarding emotional depth, it was noted that composer compositions created stronger emotional responses, while AI compositions were found mechanical and superficial. Direct quotations from participants were analyzed for each theme to present supporting evidence.

Analysis of Quantitative Data

In the research, independent variables were the producer of the work (composer or artificial intelligence), participants' cultural background, and music education status. Dependent variables were determined as participants' perception of musical elements. Control variables included tonality, tempo, listening environment, and sound level. All listening sessions were conducted in a standardized environment providing high-quality sound. MP3 audio recordings with 256 Bit Sample Rate were played to participants using HS80 reference monitors.

Participants consisted of individuals with different cultural and educational backgrounds. Thus, the effect of cultural and individual factors on perception could be examined. The study both revealed differences between composer and artificial intelligence music and evaluated how elements such as cultural background and music education shaped these perceptions.

Such approach enabled a systematic, multidimensional vision of the fundamental similarities in the music written by composer and artificial intelligence that were formed in the context of education and culture at a given time period, as well as the potential extent to which artificial intelligence might reflect composer's compositions in the context of emotion or artistic originality.

As the scale used in the research did not fulfil the normal distribution assumption and the participants of the study were less than 50, the non-parametric Mann-Whitney U test was conducted (Field, 2018; Pallant, 2020). This approach aligns with guidance about analyzing small samples of data, as outlined in Field (2018) Discovering Statistics Using IBM SPSS Statistics, and through considering non-parametric test selection principles, as discussed by Pallant (2020) SPSS Survival Manual.

For quantitative data, perceptual differences were evaluated within the context of the

study on a 5-point Likert scale. Man-Whitney U test was used to analyze the collected data. Providing an appropriate way to test differences between groups whenever normality assumptions are not met and when sample size is limited (n<50) (Field, 2018; Pallant, 2020). The Mann-Whitney U test was used to assess perceptual tests for composer produced and artificial intelligence generated compositions The test compared the mean ranks of the evaluations made by participants in two different states (composer and AI composition) to determine whether there was a statistically significant difference between them.

Reporting on Mixed Methods

Here, it uses Mixed Methods, whether the Qualitative or Quantitative analysis methods in combination had the following results. In this paper, we tried to back up the Quantitative Findings with Qualitative Interpretations.For example, composer compositions scoring high in the melodic complexity category was explained through participants' qualitative comments (e.g., composer melodies being found memorable and harmonious). Additionally, different types of data (e.g., Likert scores and open-ended opinions) were tested to see if they supported each other in understanding perceptual differences. Through these methods, the study conducted in-depth analysis both numerically and semantically, and the results obtained were presented in a statistically significant and thematically consistent manner.

Process

The study adopted a double-blind experimental design where participants evaluated piano compositions without knowing whether they were composer-made or AI-generated. Composer-created compositions and pieces generated by an AI system were carefully matched in style and tonal characteristics to ensure a fair comparison. ***Evaluated Basic Musical Elements*** are shown in Figure 1.

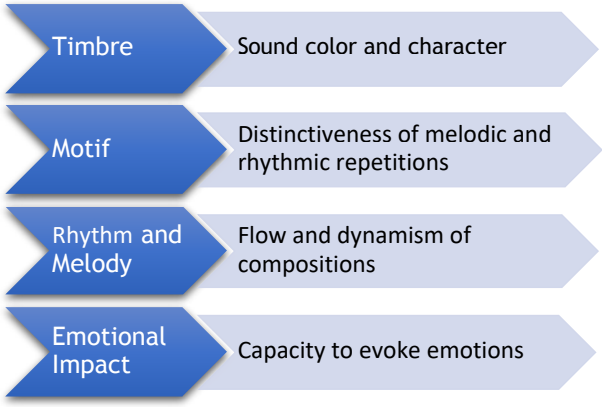

Figure 1. Musical elements evaluated in the research

Listening Session Conditions; each listening session lasted 20 minutes, and participants listened to two AI compositions and two Composer pieces lasting approximately one minute each, varying in length. Sessions were conducted under standard conditions to minimize external influences.

Composition Characteristics, Composer-composed works were found to have emotional depth and motifs developed in a progressive process rather than repetitive content, being New Age style piano pieces in A minor, in Adagio or Moderato tempos.

AI Compositions were used in the study as works generated by AI that imitated the same tonal (A minor) and tempo (Adagio and Moderato) characteristics, maintaining stylistic consistency.

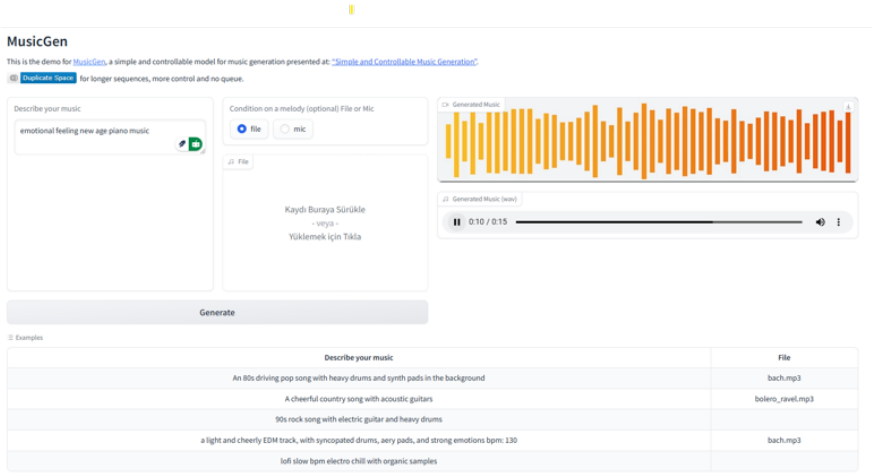

Photo 1. AI composition phase using the MusicGen model

Photo 2. A photo of listening sessions

Listening sessions were organized in the conservatory concert hall with a quality sound system, using Yamaha HS80 reference monitors. Listening distances were standardized. All audio recordings were edited using Izotope RX with Noise Gate and Normalize processes to completely eliminate external noise.

Data Collection and Analysis Procedures, during listening sessions, participants attended structured listening sessions in an environment free from distracting elements. After the sessions, participants were asked to complete a semi-structured interview form addressing their perceptions of the compositions. This study was conducted over a 4-month period between March 1, 2024-July 1, 2024.

Ethics

Ethics committee approval was obtained with Decision No. 2024/375 in accordance with the Social and Human Sciences Scientific Research and Publication Ethics Committee of R.T. Afyon Kocatepe University.

Findings and Discussion

Qualitative Findings

In the content analysis of participants' opinions about the compositions they listened to, it was determined that 5 sub-themes emerged under the theme of musical characteristics.

Theme 1. Musical Characteristics of Compositions

Sub-theme 1. Melodic Complexity

Composer-composed works were described as harmonious and emotionally evocative pieces with well-developed motifs and balanced repetition. In contrast, AI compositions were evaluated as either overly simple and repetitive or unnecessarily complex (chaotic).

> "I think melodies composed by the composer develop motifs that make them both memorable and interesting. AI pieces feel either too simple or too chaotic." (P4-19-M)

> "AI melodies generally feel mechanical and predictable, lacking the sophisticated structure of composer-composed works." (P1-22-F)

Theme 2. Harmonic Richness

Harmonies in composer-composed works were praised for perfectly blending with the melody, being coherent with each other, and seeming layered as if telling a story. AI harmonies, although functional, were generally evaluated as predictable and lacking in expression and nuance.

> "The composer's composition tells a story with harmonies that enhance emotional depth." (P5-20-F)

> "AI harmonies generally feel monotonous and lacking inspiration." (P6-24-M)

Sub-theme 3. Rhythmic Variety

At this stage of the study, rhythms in composer-composed works stood out with their dynamic and interesting characteristics, including syncopation and timing variations. AI rhythms were criticized for being excessively repetitive and static.

> "The rhythms of the composer's composition are surprising and impressive. AI rhythms are monotonous." (P8-19-M)

> "I think AI rhythms give a mechanical feeling and their execution makes them less impressive." (P3-22-F)

Sub-theme 4. Emotional Depth

In the study, composer-composed works were consistently described as emotionally deep with dynamic transitions and expressions that create a strong connection. While AI compositions were sometimes appreciated for their experimental harmonic approaches and nature within tonality, they were generally seen as mechanical and lacking originality.

> "The piece I think was composed by the composer resonated with me emotionally, gave me goosebumps, and left a lasting impression." (P5-20-F)

> "AI music, though interesting, feels lacking in emotional complexity." (P7-25-M)

Sub-theme 5. Memorability

Composer-composed works were evaluated as more memorable thanks to motif development and structural harmony. Meanwhile, AI compositions, though sometimes interesting, were found to lack the depth needed to sustain long-term memory.

> "I think I could remember the composer-composed melodies hours later. AI pieces seem like they'll be quickly forgotten." (P10-20-M)

> "I think AI compositions are less memorable." (P9-23-F)

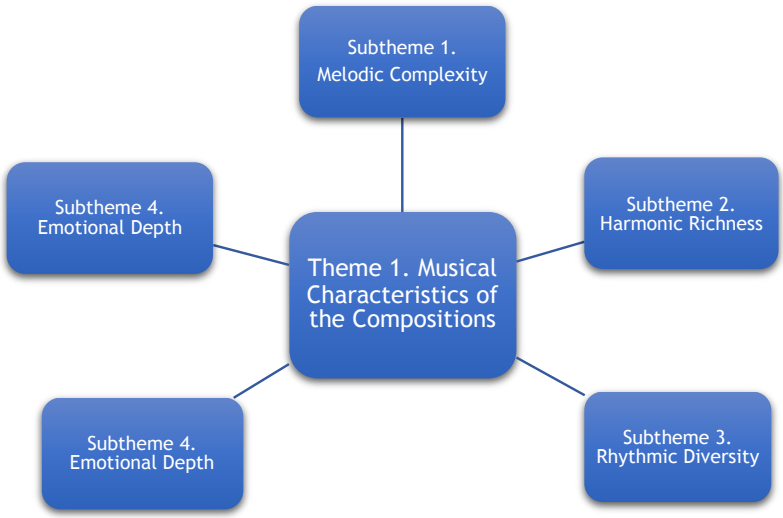

Figure 2. The graphical representation of the theme and subthemes derived from the content analysis of participants' views regarding the musical features of compositions produced by the composer and by AIt

The results of this study, while largely consistent with the existing literature, also offer unique insights into the perceptual differences between piano pieces produced by artificial intelligence and those composed by humans. The themes identified in this article (melodic complexity, harmonic richness, rhythmic diversity, emotional impact, and memorability) align with the findings of previous researchers (see also Hong, 2022; Simonetta et al., 2022). These researchers have noted that human works tend to exhibit greater complexity in terms of melodic development and emotional depth. Particularly noteworthy is that participants in the present study consistently described AI-composed music as either "very simple" or "meaninglessly complex," supporting the assessments by Zhu et al. (2023) regarding AI's limitations in producing balanced narratives in music. This study highlights another important dimension to the puzzle of disparities between expectations on either side, manifested by varying degrees of awareness and sensitivity on the part of participants from diverse cultural groups (Western, Eastern, and Asian) to these disparities. This confirms the results of Ragot et al. (2020) on the ways that cultural dynamics shape emotional response to music but pushes their work further by looking at the perspective of human and AI composition. The validated idea that AI-generated rhythms are mechanical and sufficient emotional depth is absent relates strongly to the findings of Dallas and Morreale (2020) in relation to this theme, however, the current paper offers more nuanced insights as to how this limitation especially appears in their piano music. In contrast, we find that while AI systems have made significant advances in technical compositional abilities, they fail to replicate the emotional and cultural nuances that are intrinsic to human music creativity.

Theme 2. Cultural Context and Sensitivity

This section addresses the interplay of these things — culture, address, and perceptions of musical education, and with which they approach evaluation of harmony, rhythm, and melody, between works written by AI and by the composer Thus, the cultural context of the subject plays a major role in how both the AI-generated and the composer's piano pieces are perceived and distinguished. Not just by principles of music that apply to all music, but also by the distinctive aesthetic and emotional preferences, and cognitive scaffolding of music, that each culture's music brings to the ears of those born into that tradition.

Subtheme 1. Eductive and Cultural Dimensions

Those with conservatory-level musical training appreciated the complexity and nuance of the works of the composer, and they were generally able to quickly identify and criticize the simpler structures found in AI compositions. Cultural backgrounds, along with preferences regarding tonal predictability and innovation, influenced how both AI and composer works were evaluated.

> "I can immediately recognize the constantly repeating patterns in AI compositions because, thanks to my classical music training, I am more sensitive to such structural features." (P1-22-F)

Subtheme 2. Distinctive Features

Participants defined mechanical repetitions and a lack of naturalness as the distinguishing markers of AI music.

> "There is no natural flow in the melodies generated by AI; it feels mechanical as if it were calculated by a machine." (P5-20-F)

Subtheme 3. Musical Knowledge

Formal training and knowledge of harmonic progression and tonality heightened sensitivity to rhythmic subtleties.

> "My ability to understand the subtle details and transitions in the harmonic structure is directly related to my music training. This makes it easier for me to distinguish between AI and the composer's pieces." (P9-23-F)

Subtheme 4. Cultural Diversity

Western participants (those who prefer listening to Western music) appreciated the tonal structure, whereas non-Western participants appreciated experimental elements.

> "My familiarity with Eastern music allows me to more easily accept unconventional sound combinations." (P6-24-M)

Looking at these findings, it was stated that participants who were accustomed to modal and atonal structures, especially in Turkish music, tended to favor experimentation, while participants who were knowledgeable about and fond of tonal structure placed greater emphasis on musical elements when distinguishing AI-generated music from the composer's works.

> "My habit of listening to modal music makes it easier for me to appreciate different timbres and experimental approaches." (P8-19-M)

Participants felt and emphasized the complex interaction between cultural contexts and individual perceptions.

> "My musical preferences and cultural background profoundly affect the way I evaluate compositions." (P2-19-M)

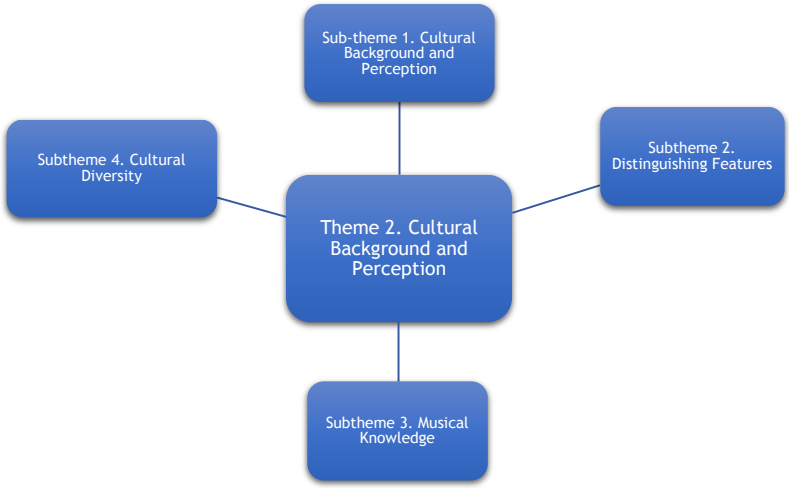

Figure 3. The graphical representation of the theme and subthemes derived from content analysis of participants' views on the perceptual and cultural factors involved in distinguishing compositions by the composer and by AI

The study creates an output to provide feedback to AI systems that they need to better mimic the emotional depth and structural consistency of composer creativity. The recommendation to train music models that pay attention to emotional depth and structural consistency in the development of AI music models should be considered by those who produce these models. As such, there is a push to take these systems further, beyond engrained repetitions of composers and into the creative space they occupy. One of the most challenging aspects of genuine creative music involves the integration of power of emotional expression, which is mainly embodied in energetic variations, understated timbral hints and sensitive harmonic modulations (Huang et al., 2024). Likewise, the construction of an overarching structural project in terms of thematic development, motivic coherence, and a coherent musical narrative remains a major difficulty for AI-based generative models (Yang & Lerch, 2020).

Theme 3. Music Education and Culture

Music education plays a significant role in the perception and differentiation of compositions, enhancing the ability to distinguish between AI and the composer's music. While educated listeners are more attuned to subtle elements such as harmony and motif development, untrained listeners have focused on surface-level features like tempo and repetition.

Subtheme 1. Musical Educational Background

Participants with formal training recognized harmonic progressions and dynamic changes in the works composed by the composer. AI compositions were generally described as less impressive and mechanical.

Participants without previous musical training found AI compositions appealing due to their predictability and accessibility, while they perceived the composer's works as more complex and challenging.

> "If I had not received any music education, I might not have been able to distinguish the composer's piece from the AI piece. This allowed me to notice the emotional depth and structural integrity in the composed works; in my opinion, AI pieces lacked these qualities." (P1-22-F)

> "As someone without previous music training, I found it easier to follow AI music, but the pieces lacked emotion." (P5-20-F)

Subtheme 2. Musical Cultural Interaction

Cultural context plays a key role in selecting a piece to listen to, shaping an individual's musical preferences and evaluative capacity (Morrison & Demorest, 2009). For instance, in the tables, participants identified as Western (i.e., those who prefer listening to Western music) prioritized harmonic resolution and narrative structure, whereas Eastern participants highlighted modal flexibility and rhythmic complexity. The listening habits cultivated within a participant's cultural context led them to describe AI compositions as emotionally flat due to a lack of harmonic complexity and tonal development. Eastern listeners appreciated the structural consistency of AI compositions, but emphasized the absence of traditional modal variations and rhythmic dynamism.

> "I think there is a mistake in harmonic progression in AI compositions. For this reason, I couldn't connect with them emotionally." (P7-25-F)

> "In my opinion, AI compositions lack traditional modes and do not reflect our nature. However, their rhythmic variations were interesting." (P6-24-M)

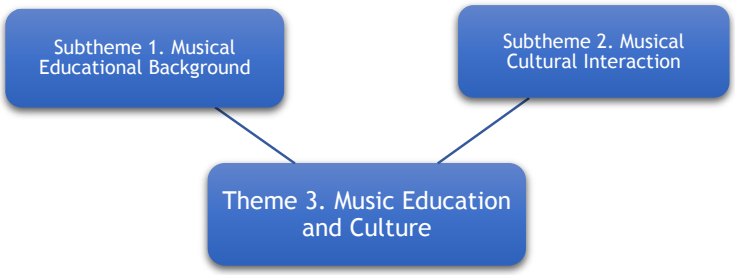

Figure 4. The graphical representation of the theme and subthemes derived from the content analysis of participants' views on the music educational background and musical cultural interaction in distinguishing between the compositions by the composer and by AI

Theme 4. Differences in Musical Preferences

Subtheme 1. Harmony and Rhythm Preferences

Cultural differences were also reflected in preferences for harmony and rhythm. Western listeners preferred harmonically rich compositions with clear resolutions, whereas Eastern listeners appreciated rhythmic complexity and experimental structures. The works composed by the composer received higher scores among all cultural groups for their harmonic richness and rhythmic innovations.

AI compositions were criticized for repetitive rhythms and a lack of harmonic depth but were appreciated in some contexts for their experimental structures.

> "The emotional shifts in the composer's pieces were unforgettable, and the AI pieces felt bland and unsuccessful. (P6-24-M)

> "AI music sounded very interesting at first but has no feeling so it got boring quickly. (P3-22-F)

Subtheme 2. The Role of Emotional Perception

Emotional resonance emerged as a critical factor distinguishing the composer's and AI compositions. While the works composed by the composer elicited stronger emotional responses through dynamic transitions, phrasing, and harmonic interplay, AI compositions were generally perceived as superficial.

The works composed by the composer were described as emotionally profound, forming a narrative that resonated with listeners. AI

compositions were perceived as mechanical, though some participants appreciated their structural simplicity.

> "The emotional transitions in the composer's pieces made them unforgettable, while the AI pieces felt flat and uninspired." (P9-23-F)

> "AI music was initially intriguing, but its lack of emotional depth made it less appealing over time." (F4-19-M)

Figure 5. Graphical representation of the theme and subthemes derived from the content analysis of participants' views on musical preferences in distinguishing between the compositions by the composer and by AI

In this context, the study's findings can be related to the existing literature as follows:

The findings of this research regarding the role of educational background in musical perception align with the studies conducted from a cognitive neuroscience perspective by Peretz et al., (2012). This latter finding particularly supports the claims of Pearce and Wiggins (2020) regarding the importance of education in the perception of musical structure—specifically the success participants that were musically trained had in distinguishing compositions by AI and human composers. Similar to Simonetta (2022) et al., observations, trained listeners were able to better identify harmonic progressions and dynamic changes that discusses the perceptual gap between MIDI-based representations and live performances.

This role with the determining impact of cultural back ground of musical perception emerged in our study follows the cultural compatibility theory founded through Dubnov et al., (2021). The Western listeners' preference for harmonic resolution and Eastern listeners' preference for modal flexibility are consistent with the findings of Greenberg et al., (2022) showed based on their large study, with data from 53 countries. That means musical perception is determined by cultural codes rather than only by generalized principles.

Our conclusions about the emotionless nature of AI-composed works seem to correlate with experimental studies on evaluating works of music composed by AI, including those by Hong et al., (2021). You even feel stronger emotions when listening to compositions by the composer, supporting the judgments of Shank et al., (2023) on AI composers bias. These results show that, despite AI's technical ability, it is, as Camurri et al., (1999).

The repetitive structures and limited creative capacity of the AI-composed pieces identified within our study are consistent with Zhu et al. (2023) about problems with AI music generation systems. As suggested by Huang et al., (2024), this highlights the need for more emotionally nuanced and structurally coherent AI systems.

They have significant implications and indicate we need to revisit AI's role in music production, to focus more on the cultural and emotional aspect. There is more work to be done exploring the effect of AI systems on the creative process, as suggested by Yang and Lerch (2020).

Factors	Composed Work	N	Mean ($\overline{X}$)	Mean Rank	Rank Sum	U	p
Melodic Complexity	Composer	10	4.3	14.25	142.50	12.50	.03*
	AI	10	2.8	6.75	67.50		
Harmonic Richness	Composer	10	4.5	14.85	148.50	6.50	.01*
	AI	10	3.0	6.15	61.50		
Rhythmic Diversity	Composer	10	4.0	13.90	139.00	16.00	.04*
	AI	10	2.9	7.10	71.00		
Emotional Depth	Composer	10	4.6	15.20	152.00	3.00	.001*
	AI	10	3.1	5.80	58.00		
Memorability	Composer	10	4.4	14.55	145.50	9.50	.02*
	AI	10	3.2	6.45	64.50		

Note: According to the results of the Mann-Whitney U test, inter-group differences for all perceptual factors are statistically significant (p<.05)

As seen in Table 2, the U-test was applied to evaluate the significance of the differences between the Composer and AI compositions for each criterion. The works composed by the Composer scored significantly higher in all categories (p<.05). This indicates that participants distinguished the musical elements of the works composed by the Composer in terms of melodic complexity, harmonic richness, rhythmic variety, emotional depth, and memorability.

The perceived musical element scores of the works composed by the Composer were as follows: Emotional Depth ($\overline{X}$=4.6), Harmonic Richness ($\overline{X}$=4.5), Memorability ($\overline{X}$=4.4), Melodic Complexity ($\overline{X}$=4.3), and Rhythmic Variety ($\overline{X}$=4.0). The perceived musical element scores of the works composed by AI were as follows: Memorability ($\overline{X}$=3.2), Emotional Depth ($\overline{X}$=3.1), Harmonic Richness ($\overline{X}$=3.0), Rhythmic Variety ($\overline{X}$=2.9), and Melodic Complexity ($\overline{X}$=2.8).

Melodic Complexity

Composer-created works were praised for their intentional motif creation and balanced, harmonious melodic development contributing to emotional depth. In contrast, AI compositions were criticized as either overly simple (relying on repetitive patterns) or irregular and lacking emotional resonance. Some participant perspectives are noted below. While quantitative analysis was conducted at this stage, participant views are included here to demonstrate consistency with qualitative analyses.

> "Melodies composed by the composer develop motifs that make them both memorable and engaging. AI pieces feel either too simple or too chaotic." (P3-22-F)

> "AI melodies are usually too predictable, which makes them feel mechanical and repetitive." (P5-20-F)

Harmonic Richness

Composer-created works were characterized by layered and emotionally rich harmonies that seamlessly integrated with melody, adding depth and narrative structure. AI harmonies were generally perceived as predictable, mechanical, and lacking cohesion with melody.

> "Composer's harmonies merge with the melody to add depth and a sense of storytelling." (P8-19-M)

> "AI harmonies mostly feel monotonous and begin to sound the same after a while." (P6-24-M)

Rhythmic Variety

Composer-created works were praised

for their dynamic rhythmic patterns that enhanced emotional engagement and maintained listener interest. AI compositions were characterized as repetitive and static, with faster tempos described as excessively mechanical.

> "The rhythms in composer-created works offer variety and keep the listener engaged. AI rhythms feel predictable." (P4-19-M)

> "The repetitiveness of AI rhythms starts to feel monotonous after a while." (P2-19-M)

Emotional Depth

Composer-created works were consistently evaluated as emotionally rich, featuring dynamic transitions, harmonious melody-harmony interaction, and expressive motifs that established profound listener connection. AI compositions were generally described as mechanical and superficial, though some participants appreciated their experimental approaches.

> "Composer-created works with emotional transitions particularly resonated with me much more." (P9-23-F)

> "AI lacks emotional depth. It feels more like a mechanical process." (P7-25-F)

Memorability

Composer-created works were assessed as more memorable due to their intentional motif development and emotional structures. AI compositions, while sometimes initially interesting, proved less effective long-term due to repetitive patterns and limited development.

> "Composer melodies stay in my mind even hours after listening. AI pieces are easily forgotten." (P10-20-M)

> "AI songs are interesting to read at first, but not memorable because they lack depth. (P1-22-F)

The works created by composers significantly outperformed those made by AI for every criterion measured ($p<0.05$). This is to show the advantages of the composer music in emotional engagement, structural coherence, and artistic depth. Though the occasional AI composition was honored for its simplicity or experimental details, they were generally criticized for being predictable, emotionless or mechanically executed. This scrutiny offers useful suggestions to improve future AI music systems so that they better reflect the richness, complexity, and emotionality inherent to works composed by humans.

These findings are consistent with the basic results from Hong et al., (2021): their study also revealed that composer works were more effective than AI compositions in both emotional depth and structural integrity. Additionally, Shank et al., (2023) experimental study found similar evidence that listeners perceived AI music to be more mechanical and shallow. These findings are consistent with those of Simonetta et al., (2022)'s challenge of the ability of AI to express intention as articulated by composer in his work detailing some of the challenges AI faces in musical creativity.

Emotional Depth and Memorability were the categories displaying the most considerable disparities. This puts weight on emotional and structural elements in composer-made work. Although the AI compositions were praised for their innovation, they have also been criticized for their predictability, lack of emotional engagement, and lack of structural coherence. Subsequent refinements to AI models ought to work toward closing the perceptual quality gap by implementing improvements to emotional expressiveness and dynamic variety.

The predominance of differences in Emotional Depth and Memorability persists with Camurri et al., (1999) early observations about the limits of AI in mimicking displays of emotion. Zhu et al., (2023) similarly pointed out challenges that AI systems need to overcome in developing holistic and

memorable musical narratives. Ragot et al., (2020) found that AI compositions are typically seen as more technical and devoid the emotional qualities found in composer productions. This highlights the need for developments towards an emotional depth and sustainable impact capacity in future AI music production systems.

Conclusion

A study exploring how participants differentiated between AI-produced and composer-written music, based on interviews with 10 participants, identified four key themes. With "Musical Characteristics of Compositions" as the main theme, five sub-themes that emerged were: melodic complexity, harmonic richness, rhythmic variety, emotional depth, and memorability. Across these categories, participants unanimously praised the production of composer works as being far superior to AI compositions.

The tematic "Cultural Background and Perception" included four sub-themes (cultural-educational effects, distinguishing characteristics, musical knowledge, and cultural diversity) and showed how the cultural background of participants influenced their musical perceptions. Participants in the "Music Education and Culture" theme (one of three explored) suggested that musical education and culture have a major impact on how we perceive music, although the musically untrained apparently struggle to differentiate between AI and composer works while musically trained participants excelled in identifying human handiwork.

Exploring the sub-themes of harmony-rhythm preferences and emotional perception provided further insights, revealing differences between the assessment of works created by AI compared to those composed by the human hand. The quantitative data confirmed that the composer works substantially rated higher than the AI compositions with delta scores of all five physical categories (melodic complexity, harmonic richness, rhythmic variety, emotional depth, and memorability) ($p<0.05$). Differences were especially stark in emotional depth ($\overline{X}_{composer}=4.6$, $\overline{X}_{AI}= 3.1$) and memorability ($\overline{X}_{composer}=4.4$, $\overline{X}_{AI}= 3.2$).

This broad analysis engages with the developing field of artificial intelligence and musical composition while keeping an eye on the cultural and perceptual dimensions that shape the users experience. These results indicate pathways for AI music generation systems, but without losing sight of the aesthetics that define human musical creativity.

Steps taken to synthesise qualitative and quantitative methods, enabling thorough data provision and exploration, that contribute knowledge on both machine ability and humans composing music.

Recommendations

Recommendations for Future Research

In this study, a design was created where the works composed by AI were perceptually compared to those composed by the Composer.

- Future studies should expand the participant base and include neurocognitive data to gain a deeper understanding of perceptual mechanisms.
- Instead of including individuals with differences in a single group, an experimental design could be implemented by creating separate groups with specific characteristics (Western music, Eastern music, education levels).
- The cultural diversity of music was addressed within the context of Turkish music in Turkey. Comparative experimental designs could be conducted in different countries and through various music cultural identities.
- Interviews could be conducted by reaching participants from different universities and regions.

- Perceptual factor comparison studies could be conducted on different AI applications instead of the one used in the research.

- It may be recommended to examine the perceptual differences between composer and AI music with larger participant groups."

Recommendations for Practitioners

- This research specifies important musical perception factors that can be included in the informed training of music producers working with AI systems.

- However perceptual factors play a crucial role in the production of AI music so awareness seminars about its impact can be conducted for the music educators.

- Developers of music technology can use these insights to create advanced algorithms that improve the user experience and embed profound emotional characteristics of music composed by humans.

- These insights can encourage media and entertainment industry professionals in developing top-of-the-shelf AI music that offers composer-machine collaboration.

- The results can be used to design interactive environments for games, virtual reality, and music therapy that create feelings that linger and stay.

Research Limitations

We investigate perceptual differences between piano compositions written by AI vs those written by a composer in terms of timing, pitch, dynamics, tonality, motif recognition, and complexity. With a focus on cognitive recognition processes in listening sessions, the research includes various cultural perspectives. The study focuses on piano music and does not generalize to other genres (e.g. orchestral or electronic music). While the study's participant pool was culturally diverse, it exclusively included individuals formally educated in music, although the study deliberately excluded professional composers. Listening sessions lasted from several seconds to one minute, possibly restricting perceptual adaption to AI music.

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Appendix 1. Semi-Structured Interview Form

Semi-Structured Interview Form
Research Objective: This interview aims to understand how participants perceive music produced by artificial intelligence (AI) versus composer-created music, their processes of distinguishing between these two types of music, and which musical elements influence perception. Participants' musical experiences, cultural backgrounds, and perceptions of creative expression will be evaluated.
Age: **Gender:** **Education Level: Musical Training?** (Yes/No)
Level of Musical Training (If any):
Cultural Background:
Level of Engagement with Cultural Music:
Interview Questions
Question 1. Do you think the piece you listened to was composer-created or AI-generated? What are the distinctive features that led to this conclusion?
Question 2. Which musical characteristics (rhythm, melody, timbre, motif, etc.) were particularly notable to you in the piece you listened to? Can you share what these characteristics suggested to you about the piece?
Question 3. Were there any specific elements or feelings that suggested this music might have been AI-generated? If so, how would you describe these characteristics?
Question 4. How did your musical background or education provide an advantage in your process of identifying or distinguishing this music (if any)? When you consider how you analyzed the music, can you observe the influence of this knowledge?
Question 5. Do you believe AI-generated music can carry the creative expressiveness or emotional capacity characteristic of human composers? Why do you think this way?
Question 6. Do you think having a different cultural background influenced your process of identifying or distinguishing this music? Did your cultural musical background contribute to your perception of AI music?
Question 7. Did your preexisting thoughts or expectations about AI-generated music influence your listening and evaluation process? How?

Appendix 2. Analysis Guidelines for Semi-Structured Interview

	Analysis Guidelines for Semi-Structured Interview
Questions	Descriptive Analysis Foundations
Question 1	Responses will be analyzed to understand participants' cognitive processes in distinguishing between AI and composer-made music. Special attention will be paid to how participants evaluate musical elements such as timbre, rhythm, and melodic structure.
Question 2	Through descriptive analysis of musical characteristics identified by participants, evaluation will focus on determining which elements are most distinctive and what fundamental differences emerge between AI and composer-created music.
Question 3	Analysis will focus on identifying elements that participants consider indicative of AI-generated music. Particular emphasis will be placed on factors such as mechanicality, repetition, and lack of naturalness.
Question 4	The study will examine whether participants possess musical education or knowledge and evaluate how this knowledge level influences their ability to distinguish between AI and composer-created music.
Question 5	Participant perspectives on AI music's emotional and creative potential will be analyzed, evaluating how AI music compares to composer-specific creative expression.
Question 6	Research will examine how participants' cultural backgrounds influence their music perception and evaluation processes, analyzing how AI music is perceived through various cultural lenses.
Question 7	Analysis will focus on how preconceptions or expectations about AI music shape participants' evaluative processes.
Analysis Plan	
This analytical methodology will categorize participant responses thematically into distinct categories. Key emerging themes include:	
Distinguishing Characteristics: Assessment of elements participants highlight when differentiating between composer-created and AI music (e.g., mechanicality, lack of naturalness, repetitive structure). **Role of Musical Knowledge:** Evaluation of whether musical knowledge or education enables participants to conduct deeper musical analysis. **Cultural Background Impact:** Analysis of cultural background's influence on music perception; examination of how different cultural musical elements create distinctions in AI music recognition. **Emotional Expression Perception:** Analysis of participants' perception of emotion and creative expression in AI music; interpretations regarding both types of music's creative expression potential. **Prejudices and Expectations:** Examination of participants' preconceptions or expectations regarding AI music and their impact on the perceptual process.	

Appendix 3. Perceptual Factors Evaluation Scale for Musical Works

Perceptual Factors Evaluation Scale for Musical Works					
Very Low (1 point), Low (2 points), Normal (3 points), High (4 points), Very High (5 points)					
Dimensions	**1**	**2**	**3**	**4**	**5**
Dimension 1. Melodic complexity					
Dimension 2. Harmonic richness					
Dimension 3. Rhythmic variety					
Dimension 4. Emotional depth					
Dimension 5. Memorability					

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