



Structural Analysis of Indigenous Music of Gilan; Proposing a Graphical Model for the Study of Modal Relationships in Selected Pieces

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ABSTRACT

The indigenous music of Gilan, as part of the musical heritage of northern Iran, possesses extensive structural, modal, and functional diversity. This research, adopting a descriptive-analytical approach, examines the typology of Gilan's indigenous music and conducts a structural analysis of several selected pieces from various regions of this province. In this study, alongside a brief introduction to the cultural and ritual context of Gilani music, several vocal and instrumental pieces from mountainous and lowland areas are selected and analyzed in terms of modal structure, rhythm, meter, tempo, and form. Furthermore, a graphical model is proposed for representing modal relationships and the role of central pitches within the melodic structure, which, through the use of color, melodic space, and motion density, enables comparative study of the pieces. The results indicate that the biological and cultural differences between the mountainous and lowland regions of Gilan are reflected in the melodic structure, internal tempo, and rhythmic behavior of the pieces. Pieces from mountainous regions generally exhibit greater melodic motion, higher internal tempo, and greater temporal density, whereas pieces from lowland regions display longer durations, relative stasis, and slower tempos.

Introduction

The regional music of Iran constitutes one of the most significant cultural and identity-related manifestations of local communities, and in many cases bears a direct relationship with geography, modes of livelihood, rituals, and the collective memory of the people in each region. The province of Gilan, owing to its climatic diversity, the biological differences between mountainous and lowland areas, and its proximity to neighboring cultural regions, possesses one of the most diverse musical traditions in Iran. The indigenous music of Gilan is not limited to folk songs; rather, it encompasses a broad spectrum of ritual chants, narrative recitations, work songs, evening-gathering songs, theatrical pieces, and music associated with collective rituals. Each of these genres has been shaped within a specific social and functional context and exhibits differences in modal structure, rhythmic behavior, and melodic form.

The present research aims to conduct a structural investigation of a portion of Gilan's indigenous

music and to study the modal relationships within selected pieces. In this study, in addition to structural analysis of the pieces, an attempt has been made to examine the relationship between musical characteristics and the biological and cultural conditions of different regions of Gilan. Furthermore, this research proposes a graphical model for representing the relationships among central pitches, melodic spaces, and modal motion, thereby enabling a comparative study of regional music pieces through a visual approach.

Indigenous Music of Gilan and Its Typology

The culture of the Gilani people is the result of the intermingling of pre-Islamic and Islamic traditions, manifested in religious structures (shrines, Shiite mausoleums, and Sunni minority sites in Talesh) as well as in the veneration of natural elements in devotional practices. In this region, natural elements such as ancient trees referred to as "Āqādār" possess sacred status. The tree species "Kish" (boxwood) and "Āzād" hold particular significance and

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popularity in folk beliefs (1). The smooth, polished, and resilient bark of the Āzād tree has rendered it a symbol of strength and independence in folk culture; elderly local women regard the felling of such trees as an act of blasphemy. This sacredness is today reflected in the architecture of traditional Gilani dwellings, where Āzād wood is utilized as primary structural beams due to its high resistance to insects and humidity. On the other hand, the forest embodies a dualistic function in the region's indigenous imagery: on one hand, it serves as a refuge for the oppressed and fugitives; on the other, it is considered the abode of malevolent mythical creatures. In addition to the forest, high mountain peaks, domestic animals such as cattle, as well as eggs, play a prominent role in beliefs, cuisine, games, and rituals of anointing and warding off evil. This cultural and geographical foundation constitutes the primary basis for the structural differences between the music of the mountains and that of the lowlands (1).

The indigenous music of Gilan can be broadly categorized into several main domains: work songs, ritual music, narrative recitations, theatrical pieces, evening-gathering music, and instrumental pieces. Many of these genres are directly connected to the modes of livelihood, agriculture, animal husbandry, and collective rituals of the region's people. In mountainous areas, pieces with greater melodic motion, higher temporal density, and more dynamic rhythmic behavior are observed. In contrast, in lowland and eastern regions of Gilan, melodies tend to be more extended, slower, and characterized by relative stasis. Furthermore, certain pieces possess ritual or theatrical functions. For instance, the "Ārus-e Goli" ritual, in addition to its musical aspect, embodies theatrical and social functions and is performed in the form of collective, celebratory events. On the other hand, chants such as "Jān-e Dusti" are performed within the context of ritual evening gatherings and are associated with symbolic meanings, collectivism, and fortune-telling ceremonies.

A significant portion of Gilani music is also influenced by the narrative epics and vocal traditions of Mazandaran. The presence of genres such as "Tāleb Jān" and "Amiri" in eastern Gilan indicates the cultural connection of this region with the musical sphere of Mazandaran.

For the classification of Gilani folk music, three principal research narratives and perspectives exist, which are examined below:

- ✓ **The Narrative of Fereyduṅ Pourreza:** Professor Pourreza divides Gilani music into two general categories: instrumental and vocal, encompassing epic, romantic, seasonal, and satirical songs. He considers the primary modal basis of these vocal forms in the pre-Islamic era to be Nava and Chahargah, which, following the advent of Islam and under the influence of

adjacency to the Mazandaran region, incorporated the intervals of Shur and, in particular, Dashti. Pourreza regards the melodies of the Qasem Abadi repertoire as distinct and maintains that the Shushtari intervals found in field songs (especially during rice transplantation in areas such as Kuch Esfahan) originate from the migration of southern tribes to this region (2).

- ✓ **The Narrative of Armin Faridi Haftkhani:** Faridi categorizes the region's vocal repertoire on two bases: "meter" and "performance context." Based on meter, he designates unmetered chants as "Āvāz," metered narrative and storytelling chants as "Manzumeh" (epic), and other metered examples as "Taraneh" (song). Based on performance context, he defines seven groups of vocal repertoires: 1- Evening-gathering (Shunishin): including Sharaf Shahi, Chārvādāri, and Ghorbati chants, as well as satirical songs such as Zarengis and Ra'nā. 2- Wedding: cheerful local and Qasem Abadi songs. 3- Nowruz-khāni: spring-heralding chants, usually performed in the Chahargah modal system. 4- Lullabies (Sari Gāreh): cradle songs, which are metered in the lowlands and unmetered in the eastern mountains, performed in Dashti. 5- Mourning: non-religious female laments. 6- Work songs (Bijār-Sarkhandegi): collective songs of rice fields such as Hiumāreh, Jun-Lili, and Zangeh-Zangeh, featuring a call-and-response structure. 7- Religious ceremonies: including Chāvushi-khāni and Shahādat-khāni (3).

Instrumental Repertoire and Climatic Differences from the Perspective of Hossein Hamidi:

The instrumental repertoire of Gilan is formed on the basis of indigenous instruments such as Loleh or Haleleh (a seven-joint shepherd's pipe), Kamāncheh, Sornā, Naghāreh, Karnā, and Karp (a wooden mourning instrument). Hossein Hamidi maintains that the music of the Gilan mountains (Deylamān) is entirely distinct from lowland music in terms of form, content, and modal structure. In mountain music, the witness note is established on the fourth interval of the Shur mode (Deylamān mode), and the final note descends to the third interval; whereas in lowland music, the foundation is the tonic of Shur, with the witness note positioned on the fifth interval. In terms of content, lowland music evokes the delicacy, humor, and forthrightness of rice and tea cultivation, while mountain music reflects the harshness, agility, and hardships of pastoral and herding life (4).

Research Methodology

The research methodology employed in this study is descriptive-analytical, and data have been collected through the analysis of audio samples, written sources, and structural examination of selected pieces. In the analysis of the pieces, the following elements have been investigated:

- ✓ Modal structure and the role of central pitches.
- ✓ Frequency range.
- ✓ Rhythmic behavior and meter.
- ✓ Internal tempo.
- ✓ Form and phrase structure.
- ✓ Predominant melodic patterns.

In this research, several pieces from various regions of Gilan have been selected to enable comparative study of their musical characteristics.

Proposed Graphical Model for Modal Analysis

In this research, a graphical model is proposed for studying modal relationships and representing the role of central pitches. This model is designed based on a combination of color, melodic space, and motion density, and endeavors to visually represent the modal structure of the pieces. Rather than replacing traditional notation, this model is proposed as a supplementary tool for comparative analysis and visual study of modal structure in regional music.

Color: Each of the colors in the complementary spectrum is the result of the accumulation of other colors within it. In a color aggregate, its constituent colors cannot be discerned (similar to sound harmonics in music). In this research, three colors have been selected based on psychological function (5) and comparative suitability, as elaborated below:

- ✓ **Red:** Red is considered a high-contrast color in the color spectrum and, psychologically, is recognized as attractive and stimulating. These factors have led to its designation for the witness note, as this note is perceived as enlivening its neighboring notes a note that, by attracting adjacent notes, gives life and motion to the so-called "dead" notes. In the graphic representation, uniform units are used to depict the spatial occupation of each note. This approach enables the study of the melodic motion trajectory, temporal density, and overall direction of modal movement. Furthermore, the slope and range of melodic motion in the diagrams can indicate the degree of motion or stasis in the structure of the pieces.
- ✓ **Blue:** In the psychology of color, blue is associated with stasis, silence, and tranquility, and for this reason it has been selected for the final note.

- ✓ **Black:** Black is the color of death and finality, and has thus been chosen for the concluding note.
- ✓ **Gray:** Gray is considered a neutral and relatively "dead" color; accordingly, all notes other than the three effective notes (witness, final, and concluding) are represented in this color, unless influenced by the three effective notes, in which case a combination of gray and the relevant effective color is employed.
- ✓ **Purple:** A combination of red and blue, designated for a note that simultaneously evokes the character of another mode as a secondary witness while also assuming a stabilizing function.

Shape: In the aforementioned diagram, isometric divisions have been employed for ease of rendering. To illustrate the spatial occupation of each note, identical squares are used, with each square representing the time value of a demisemiquaver. A flat geometric shape, rather than lines, has been adopted to facilitate better comprehension of the spatial occupation of notes and to provide a more complete graphic representation for examining the direction and orientation of the melody in the pieces, such that the melodic slope, due to the turbulence inherent in the notes, achieves a more authentic representation in both surface and volume.

Selected Range:

To represent the melodic range, five squares are utilized on either side of the witness note. This selection is based on the general nature of melodic motion in Iranian music, which typically proceeds stepwise or with minimal leaps (6); however, given the importance of structural leaps such as melodic thirds or fifths, a maximum of five units (squares) has been allocated. The surface considered extends from the lowest note employed within this range up to the note in question at each moment, allowing for the examination of the overall spatial occupation of the melody within a defined range.

Nature of Each Square: Each square (note) is initially and essentially "dead" (gray), unless influenced by the witness, final, or concluding notes. In that case, according to its proximity to and influence by these three notes, it acquires a spectrum of the color specific to each of these notes.

Gosen-e Dokhān

Laleh: Hasan Babāei (4):

This instrumental piece is performed for gathering sheep. It exists in various versions depending on the performer, though all employ a similar modal melody. The selected piece is metered. "Gosen-e Dokhān" is one of the principal modes of Laleh, consisting of two sections; performers typically refer

to the second section as "Nar Abhor," believed to be intended for watering the sheep. The selected piece is an instrumental work from the Talesh region, adjacent to the Deylamān mountains, known as "Mamudbeh," and forms part of the region's narrative repertoire.

Modal Structure

- ✓ **Frequency Range:** This piece spans a frequency range from F4 (349.2 Hz) to approximately Eb5 (circa 659.25-698.46 Hz).
- ✓ **Role of Pitches in Modal Structure:** In the first phrase group, one of the central pitches is the neutral B (Bb), which, with the highest density, assumes a role akin to the witness note, followed by C with the highest density, assuming a role akin to the final note. In the second phrase group, C not only loses its final-like identity but is entirely eliminated. In this phrase group, the neutral A (Ab) assumes a central, witness-like identity, followed by the neutral E (Eb), which with the highest density assumes a final-like identity. The note F also appears as the concluding note, ending the piece. In some phrases, the final note is on the neutral B (Bb), which itself serves as a reference to the fundamental mode.

Rhythm, Meter, and Tempo:

The performance duration of this piece by Hasan Babāci is 76 seconds, comprising 249 temporal

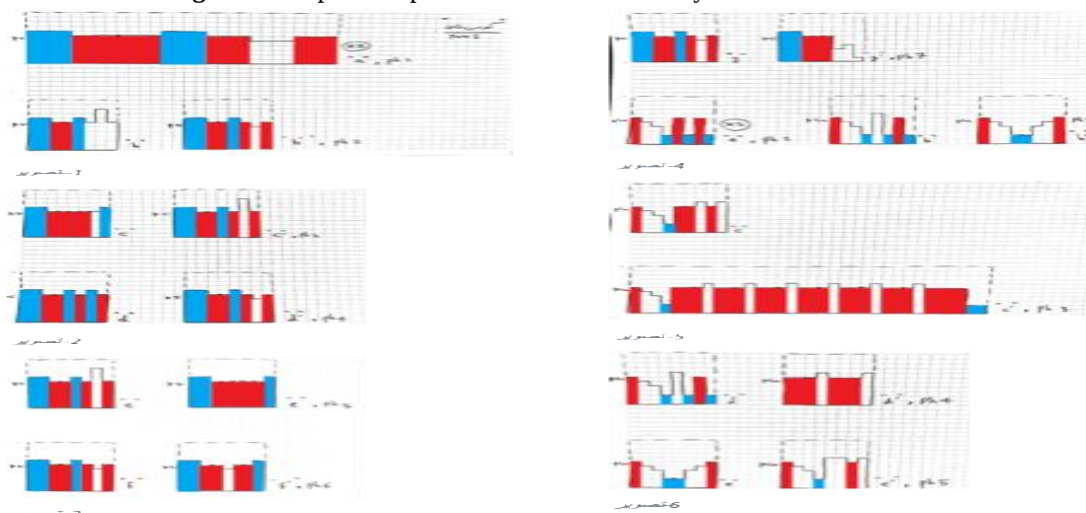
subdivisions. The primary durational values, from shortest to longest, are 1, 2, 3, and 4. The highest frequency corresponds to duration value 4 in both phrase groups and throughout the piece. The temporal combinations in Gosen-e Dokhān are equal in the first phrase group and unequal in the second due to the weight-bearing presence of duration value 3. The texture of this piece is expansive, tending toward contraction.

- ✓ **Meter:** The piece is metered in the first phrase group, employing a recurring rhythmic motif; however, in the second phrase group, it consists of rapid notes with equal or unequal successive temporal subdivisions, which imparts a slight sense of weightlessness.
- ✓ **Tempo:** In the second half of the piece, a faster internal tempo is observed; however, overall, given 249 temporal subdivisions over 76 seconds, approximately 3.27 notes are performed per second.

Formal Analysis of Figure 1:

The piece "Gosen-e Dokhān" is constructed from two phrase groups (A: a b c d e f g and B: a b c d e f g h i). In the initial group, since most phrases are variants of phrase b, they have not been individually designated as variants. In each phrase group, there are four motifs, all of equal weight. In the second phrase group, with the exception of phrases c and i where i functions as a conclusion the remaining phrases retain their four-motif structure.

Figure 1. Graphical representation of modal analysis for "Gosen-e Dokhān"



Jān-e Dusti

Jān-e Dusti is a type of Amiri (here, belonging to the evening-gathering repertoire). The center of Amiri's prevalence is Mazandaran, though various performance styles of it are heard in Mazandaran

and the eastern regions of Gilan, extending as far as Deylamān. The term Amiri (attributed to Amir Pāzvāri, a Mazani poet) is recognized in Gilan up to the regions of Ramsar and Cheboksary, but is not used in the Deylamān area. In this region, this vocal

form is known as Tabari or Jān-e Dusti. This chant is also performed during ritual evening-gathering ceremonies. On the night of Tirmāsinzeh (in the Deylami calendar, corresponding to the month of Ābān in the solar calendar), people (friends, acquaintances, and relatives) gather for an evening ceremony. Two individuals are selected from two different families one of which is typically the host and they must silently proceed to a spring, fill a metal vessel (Meres) with water, and bring it to the assembly. Those present then make wishes and each drops a metal object a key, ring, pin, or similar item into the metal vessel. Singers present in the gathering take turns reciting verses. At the end of each couplet, a person with closed eyes, acting as a representative, places their hand into the water vessel and retrieves the first metal object they touch. The object is then returned to its owner, and the meanings of the recited verses are interpreted as the answer to that individual's wish (narrated by Yusef Musāei from Ramsar) (3). One of the verses used in this piece, which responds to the wish of a person lacking the financial means for marriage, is as follows:

- ✓ Delam mi-khāhad haft shab o haft ruz arusi bedāram
Dasā bordam tu jib didam dināri nadāram
(My heart desires to hold a wedding for seven nights and seven days; I reached into my pocket and found I had not a single dinar).

Modal Structure:

- ✓ **Frequency Range:** This piece spans a frequency range from Eb4 (311.13 Hz) to Eb5 (622.2 Hz).

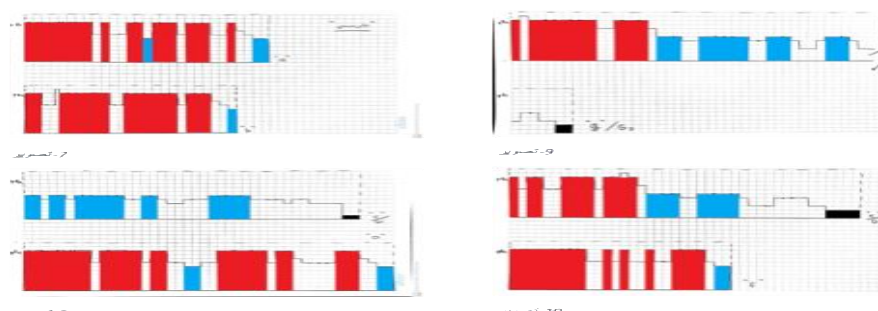


Figure 2. Graphical representation of modal analysis for "Jān-e Dusti"

Ārus-e Goli (The Flower Bride)

N. Gilān Mohseni from Lāhijān: This song is associated with a local ritual theatrical performance in Gilan, in which a man, dressed in women's clothing with humorous makeup and adornments, plays the role of the "Flower Bride" and captivates a giant and a character named Pir Bābu. These two,

- ✓ **Role of Pitches in Modal Structure:** The note Db (neutral D), with the highest density, assumes a role akin to the witness note, followed by Ab, which assumes the role of the final note. In the first phrase group, Eb serves as the concluding note, while in the two subsequent groups, E^h (neutral E) serves as the concluding note of the phrase group; in fact, the final concluding note of the piece is the final E^h.

Rhythm, Meter, and Tempo:

The performance duration of this piece by Eshāq Sohrābi is 86 seconds, comprising 198 temporal subdivisions. The primary durational values, from shortest to longest, are 1, 2, and 4. The highest frequency corresponds to duration value 4 in all three phrase groups and throughout the piece. The temporal combinations in Jān-e Dusti are, overall, unequal due to the presence of triplet-like figures. The texture of this piece is stable.

- ✓ **Meter:** Jān-e Dusti is metered in all three phrase groups.
- ✓ **Tempo:** Given 198 temporal subdivisions over 86 seconds, approximately 2.30 notes are performed per second; consequently, the internal tempo of the piece is relatively moderate to low.

Formal Analysis of Figure 2:

Jān-e Dusti is composed of three phrase groups. All three groups possess independent yet closely related characters in terms of melodic model and affective quality. The first group consists of three phrases two three-motif and one four-motif while the second group consists of two phrases, both four-motif, and the third group also comprises two phrases.

who are suitors of the Flower Bride, become embroiled in a confrontation, creating humorous moments. Ārus-e Goli is performed from house to house, and the audience encourages the performing group, musicians, and singer with cash gifts and sweets.

Modal Structure:

- ✓ **Frequency Range:** This piece spans a frequency range from F4 (349.23 Hz) to C5 (523.25 Hz).
- ✓ **Role of Pitches in Modal Structure:** The note A, with the highest density, assumes the role of the witness note, while F assumes the roles of both the final and concluding notes.
- ✓ **Typical Melody:** The predominant melodic pattern of this piece is formed by a leap of a third from A to C.

Rhythm, Meter, and Tempo:

The performance duration of this piece by Hasan Babāei is 85 seconds, comprising 290 temporal subdivisions. The primary durational values, from shortest to longest, are 0.66, 1, and 2. The highest frequency corresponds to duration value 1

throughout the piece. The temporal combinations in Ārus-e Goli are unequal due to the weight-bearing presence of duration value 0.66. The texture of this piece is stable.

- ✓ **Meter:** Ārus-e Goli is metered throughout all phrases.
- ✓ **Tempo:** Given 290 temporal subdivisions over 85 seconds, approximately 3.41 notes are performed per second; consequently, the internal tempo of the piece is relatively high.

Formal Analysis of Figure 3:

This piece is composed of eight phrase groups. The first five groups, with their rests, are approximately four-unit cells, while the subsequent two groups consist of a greater number of phrases.

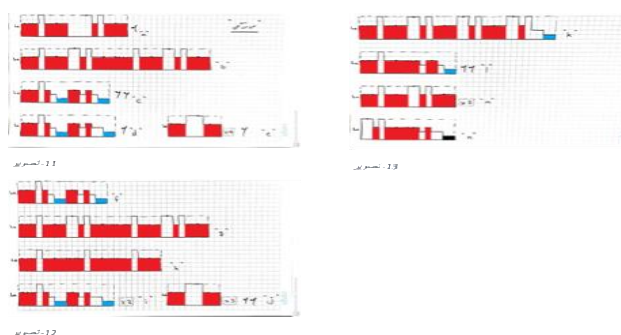


Figure 3. Graphical representation of modal analysis for "Ārus-e Goli"

Tāleb Jān

- ✓ **Singer:** Yusef Musāei

Tāleb Jān is one of the most renowned narrative epics of Mazandaran, which is also performed in the eastern regions of Gilan. Typically, Amiri verses are also sung between the couplets of Tāleb Jān epics.

Modal Structure

- ✓ **Frequency Range:** This piece spans a frequency range from F4 (349.23 Hz) to Ab4 (between 415.30 and 440 Hz).
- ✓ **Typology and Formation of Modes:** The affective quality of this piece resembles the Shahnaz branch of the Shur mode, with emphasis on the note G, which itself indicates the fundamental mode.
- ✓ **Role of Pitches in Modal Structure:** The note G, with the highest density, assumes the role of the witness note, while F assumes the roles of both the final and concluding notes.
- ✓ **Typical Melody:** The predominant melodic pattern of this piece is formed by a leap of a third from F to Ab and its return to G.

Rhythm, Meter, and Tempo:

The performance duration of this piece by Hasan Babāei is 64 seconds, comprising 85 temporal subdivisions. The primary durational values, from shortest to longest, are 1, 2, and 4. The highest frequency corresponds to duration value 2 throughout the piece. The temporal combinations in Tāleb Jān are equal. The texture of this piece is stable.

- ✓ **Meter:** Tāleb Jān is metered throughout all phrases.
- ✓ **Tempo:** Given 85 temporal subdivisions over 64 seconds, approximately 1.32 notes are performed per second; consequently, the internal tempo of the piece is relatively low.

Formal Analysis of Figure 4:

The aforementioned piece comprises two phrase groups. In the first group, a single phrase is repeated five times, while in the second group, two phrases are present, with the final phrase conveying a sense of conclusion.

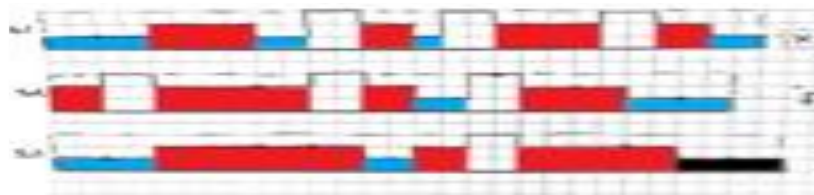


Figure 4. Graphical representation of modal analysis for "Tāleb Jān"

Conclusion

The structural analyses conducted on four folk pieces from Gilan confirm the initial hypotheses of this research regarding the direct influence of the biological environment, climate, and folk beliefs on the melodic structure of the music. In pieces from high mountainous regions (such as the melody of Gosen-e Dokhān within the pastoral culture of Deylamān), the melody exhibits short note durations, intense turbulence, sudden leaps, and a very high internal tempo (3.27 notes per second). This extreme dynamism reflects the harshness of subsistence in the mountains, the agile nature of herding practices, and the necessity for rapid responses to various natural dangers and predatory animals such as bears and wolves. In contrast, the vocal pieces and narrative epics from lowland and eastern Gilan regions (such as Jān-e Dusti and Tāleb Jān) possess a slower internal tempo, more extended melodic phrases, and less turbulence. This structural characteristic stems from the relative climatic security of the lowlands and the limited wildlife dangers confined mainly to jackals and domestic dogs which imbues the melody with a more peaceful atmosphere.

In addition to climate, this research has, for the first time, revealed a remarkable structural convergence between "indigenous architecture" and "musical aesthetics" in Gilan: just as indigenous Gilani architects (7), following ancient traditions of parsimony, economize in the use of biological resources employing the precious and sacred wood of the Āzād tree exclusively for the primary, foundational beams of the structure while relegating decorative elements to lower-quality woods the same principle governs the melodic architecture of the pieces from this region. The indigenous composer or narrator, with unparalleled economy, employs minimal pitch variety for subsidiary intervals, yet through comprehensive focus and emphasis on one or two fundamental, authentic pitches (the key witness and final notes), creates the most robust and dynamic melodic structures. This structural solidity, coupled with intervallic concision, represents the concrete crystallization of the authentic identity of Gil and Deylam culture.

From the analysis utilizing the proposed model, it is observed that only in Jān-e Dusti and Tāleb Jān does the witness note, despite its opposition to the final note, become weakened and ultimately overcome in the concluding phrases. This dominance of the final

note over the witness note in these pieces causes the melody to be propelled by the final note, resulting in a lower internal tempo and a less animated melody. Both of these pieces belong to the eastern Gilaki repertoire, which itself constitutes another manifestation of the concrete crystallization of the identity of Gil and Deylam culture.

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Authors' Contributions

All authors contributed to data analysis, drafting, and revising of the paper and agreed to be responsible for all the aspects of this work.

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