

Historical Examination and Theoretical Analysis of *Maqām Isfahān* in Persian Art Music^{*}

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ABSTRACT: *Isfahān* is a well-known and popular *maqām* (mode) in Persian/Iranian art music. Although its scale is close to the western harmonic minor scale in its current form, *isfahān*'s intervallic structure has been somewhat different in the past. This investigation is structured in two parts. The first involves examining the scale of *isfahān* in the Systematist treatises (approx. thirteenth through fifteenth century). The second entails examination of the modal characteristics of *isfahān* as a *dastgāh* (modal system) both within selected *radīfs* (repertoires) of Iranian art music and as a *maqām* in two *taṣnīf* (metered, composed song) collections. These characteristics include the intervallic structure, the scale degree functions, the relationship to other *maqāms/dastgāhs* (particularly *humāyūn*) and the common modulations. The latter part includes a preliminary evaluation of *isfahān*'s counterparts in the Arabic *maqāmāt* and the Turkish *makams*. At the end of the study, an evolution pattern is proposed for *isfahān* and the scalar transpositions of its basic form are identified. It was observed that a fourth-degree *shāhid* (4̂, prominent tone) and a third-degree *mutighayyir* (3̂, variable tone), noted in some *gūshihs* (pieces of *radīf*), are not adequately emphasized in the literature. Variation of the third degree (3̂) to form a neutral 3rd makes the contemporary scale of *isfahān* closer to its medieval form.

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Introduction

[0.1] The core of contemporary Persian art music—also referred to as Iranian classical or traditional music—is based on several *radīfs* (organized repertoires), a large number of which originated from the teachings of Mirza ‘Abdullah Farahani (1843–1918). The *gūshihs* (musical pieces or samples) in the *radīfs* were initially taught and transferred aurally from the masters to the students, which resulted in the emergence of several versions with some variations.⁽¹⁾ Many of these versions were transcribed over decades in the twentieth-century. These *radīfs* are typically divided into seven *dastgāhs* (modal systems or primary groupings) and five *āvāzes* (derivative or secondary groupings), although such categorization is debatable. For instance, Farhat (1990, 21) questioned

the subjective distinction between the primary and secondary groupings and recognized twelve *dastgāhs*. The term *dastgāh* is referred to all groupings (including *isfahān*) in this article as well.

[0.2] The seven *dastgāhs* in the *radīf* tradition comprise *shūr*, *sigāh*, *chahārgāh*, *rāst-panjgāh*, *māhūr*, *humāyūn*, and *navā*; the five “*āvāzes*” (derivative *dastgāhs*) include *abū‘atā’*, *bayāt-i turk*, *dashtī*, *afshārī*, and *bayāt-i isfahān*. In this classification, *bayāt-i isfahān* (or *isfahān* in short⁽²⁾), which is likely the most popular mode across different genres in Iranian music,⁽³⁾ is considered a derivative of *humāyūn*, as the scale of *isfahān* (being almost identical to the harmonic minor scale) can be established on $\hat{4}$ of *humāyūn* (Khaleghi 1982, vol. 2, 149). In contrast, in the Systematist school of Arabic and Persian musical traditions (the thirteenth through the fifteenth century),⁽⁴⁾ *isfahān* was one of the seven recognized species of fourth and one of the twelve *adwār al-mashhūrah* (famous cycles or scales),⁽⁵⁾ whereas *humāyūn* was not among the main tetrachords or even the main *adwār*.⁽⁶⁾ One may therefore wonder about the origins of these two *maqāms* (modes) and how their evolution over centuries resulted in a reversal of their relative status. In another study (Poorhaydari 2025), I report on the historical evolution and theoretical analysis of *humāyūn*. This article extends that work, examining *isfahān* with two main objectives. The first involves tracing it back as a distinct *maqām* in the Systematist school. The second entails examining its modal characteristics (such as the intervallic structure and the scale degree functions) in the contemporary *radīfs* and *taşnīf* (metered, composed song) collections.⁽⁷⁾ As a preliminary evaluation, *isfahān*’s counterparts in the neighboring musical systems, namely, the Arabic *maqāmāt* and the Turkish *makams*, are also identified. Near the end, I propose an evolution pattern for *isfahān* and present the scalar transpositions (or repositions) of the basic form of this *maqām*.

[0.3] Readers should note that this article is concerned with the basic theoretical characteristics of *isfahān* as a *maqām* or a *dastgāh*, as opposed to its performance aspects.⁽⁸⁾ I would like to emphasize that in no way is this article claiming to have examined the subject absolutely completely, nor should the proposed evolution pattern and the conclusions be taken definitively. This effort, at best, represents a further step in the understanding of Persian music *dastgāhs/maqāms* and finding possible connections between the disconnected Systematist *adwār* and the modern modal systems, which has been of interest to some musicologists.⁽⁹⁾ Very little work has been done in this regard, which is likely due, in part, to the difficulties encountered in connecting the dots between the two apparently different systems.

[0.4] A further issue that should be pointed out is the gap or the decline period in the theoretical analysis of music in Iran between approximately the sixteenth and the twentieth centuries.⁽¹⁰⁾ This characterization pertains not to the number of musical writings in the post-Systematist period, but to the overall quality and the content of the writings. The writings in the decline period deal mostly with inter-relationships, extra-musical, and non-theoretical properties of *maqāms* and generally lack explanations of their intervallic structures.⁽¹¹⁾ Therefore, this article, which is interested in the theoretical analysis of *isfahān* and the evolution of its intervallic structure, examines and cites the writings from almost exclusively the Systematist and the modern periods. The presence of the gap, however, may lead to conjecture on the part of the researcher. Nevertheless, the proposed evolution pattern for *isfahān* appears relatively clear at the end and does not imply a significant missing link.

[0.5] The basic terms needed for the examination of *isfahān* are explained as they are introduced in the next two sections and are also summarized in the [glossary](#) section at the end of the article. To avoid complications in defining the musical terms (such as *dastgāh*, *maqām*, *gūshih*, *radīf*, *āvāz*, etc.), a simplified approach has been favored. One may encounter somewhat different definitions for each term in the contemporary sources. For instance, as argued by Fakhreddini (2013, 36), the terms *dastgāh* and *maqām* are literally synonymous—both meaning or referring to the position of hand on the neck of the instrument. However, the two terms typically have different connotations in modern musicology. I have used the term *dastgāh* in connection to the groupings in the *radīf* and the term *maqām* outside the *radīf*.⁽¹²⁾

[0.6] A note on nomenclature should be added here. For the species titles, I have used the Systematist nomenclature even for analyzing the contemporary *maqāms*. Tetrachordal analysis of

the contemporary Persian *maqāms/dastgāhs* is a relatively new theoretical approach, and there is no consistency in the titles used to refer to the species among the musicologists. I see no compelling reason for coming up with new and subjective species titles in analyzing Persian *maqāms/dastgāhs* as some musicologists have (Talāi 1993, 16; Hodjati 1998, 97; As'adi 2008, 48), when we can find the titles in the Systematist treatises. The use of Systematist nomenclature for examining Arabic and Turkish *maqāms* provides a challenge, as they have been using tetrachordal analysis for a longer period (over a century) even as the exact meaning or intervallic structure of some of the species has changed. To tackle this issue, I have provided both the medieval titles (for consistency) and the contemporary Arabic/Turkish titles in section 5.

1. *Maqām Isfahān in the Treatises of the Systematists*

[1.1] Saḡi al-Din Urmawi (1216–1294), Quṭb al-Din Shirazi (1236–1311), 'Ali Jurjani (1339–1414), 'Abd al-Qadir Maraghi (d. 1435), Nur al-Din 'Abd al-Raḡman Jami (1414–1492), Muḡi al-Din Muḡammad Ladhiqi (d. 1494), and 'Ali Ibn-Muḡammad Mi'mar (known as Banayi, d. 1513) were among the main scholars in the Systematist school of music. Urmawi is the first scholar in the Muslim world to provide a systematized classification of the modal species, particularly tetrachords, pentachords, and octave species. In these species, he identifies three small intervals (Urmawi [1235] 2001, 14), namely *ṭanīnī* (T, whole tone), *mujannab* (J, neutral interval with a range of sizes averaging three-quarter tone), and *baqīyyah* (B, typically a semitone). Shirazi (2008, 128) recognizes two additional unnamed intervals, labelled H of 7:6 (266.9 c) and W of 6:5 (315.6), which can be referred to as half-augmented tone (close to five quarter tone) and augmented tone, respectively.⁽¹³⁾ Note that the exact sizes of these intervals depend on the fretting system applied or theoretically advocated, and have never been fixed or “standardized” in practice or even in theory.⁽¹⁴⁾

[1.2] In *al-Adwār*, Urmawi ([1235] 2001, 21) lists seven *mulāyim* (consonant) tetrachords and twelve mostly *mulāyim* pentachords.⁽¹⁵⁾ These species are used to establish eighty-four *adwār* by iterations based on the combination of a lower tetrachord and an upper pentachord. The seventh listed tetrachord is *isfahān* with the intervallic structure JJJ \flat B, which can be notated as G–A \flat –B \flat –B–C (Jurjani [1375] 1938, 298).⁽¹⁶⁾ This is the only recognized species of fourth with five tones or four intervals. Shirazi (2008, 127) added the tetrachord *hijāz*, with the intervallic structure JHB (G–A \flat –B–C), to the seven tetrachords listed by Urmawi. These two tetrachords use the same tones (at least in notation as opposed to the actual interval sizes that could vary in practice) except for one, the third tone of *isfahān* (B \flat) that is not included in the *hijāz* tetrachord. Among the twelve pentachords recognized by Urmawi, two of note include Type 7 (JJJBT) and Type 8 (TJJJB). These two species were referred to as *zīrkish-i ḡussaynī* and *isfahān-i 'asl* (or *mukhālīf-i rāst*), respectively, by Shirazi (2008, 127). Banayi ([1484] 1989, 34), on the other hand, referred to the former as *humāyūn* and to the latter as *panjgāh-i zāyid* or *isfahān*.⁽¹⁷⁾

[1.3] Urmawi provides more context for the peculiar five-tone *isfahān* tetrachord, which is worth reviewing. In *al-Sharafīyyah* (Urmawi [1267] 1938, 51–55), he explains:

The fourth is sometimes made to produce five notes; it then includes four intervals, contrary to the general rule. These intervals can be combined in various ways. The best proportioned of these combinations are of two species. The first is obtained by first deducing from the fourth the ratio interval $1 + \frac{1}{12}$, then the ratio interval $1 + \frac{1}{13}$, and finally another ratio interval $1 + \frac{1}{12}$. The complement of the fourth will then have the ratio $1 + \frac{15}{273}$. We show this species below (Row 1 in **Example 1**). To obtain the second species (Row 2), at the interval of ratio $(1 + \frac{1}{12})$ which, in the first, occupies the low end of $1 + \frac{1}{7}$, we substitute another having the ratio $1 + \frac{1}{14}$. We will thus have the ratio $1 + \frac{1}{6}$ between the first note and the third, $1 + \frac{1}{4}$ between the first and the fourth, and $1 + \frac{1}{3}$ between the first and the fifth. The intervals of this type of fourth can be combined in twenty-four different ways. The first combination, the only one used, is very well known; the others are weak in sound. I call this genus the SINGULAR or FIRST PARTICULAR. Below, in a table, (you can find) the representation of this type of fourth and all its (twenty-four) combinations (not presented here). If we remove

from the previous genus (Species 2) the ratio interval $1 + \frac{1}{15}$, the rest will constitute a kind of particular, independent genus, resembling nothing at all from the others. I call this genre the SINGULAR SECOND. You know that such a genre can only have six combinations. These combinations, however, all sound the same to the ear and are only worth one because of the smallness of their intervals which are too close. Any melodic composition based on the notes of the SINGULAR FIRST genre, today well known to the masters of the art, who generally employ this genre at the top of the scale, bears the name *isfahān*. Any melodic composition based on the notes of the SINGULAR SECOND genre is called by them *rāhawī*. The ancient Arabs called these *mazmūm*.

[1.4] As shown in Example 1, Species 2 (the basis of *isfahān* according to Urmawī) should be presented as a series of four *mujannabs* (of somewhat different sizes), based on the interval sizes he identifies. However, Urmawī ([1235] 2001, 21; [1267] 1938, 119) presents it as a series of three *mujannabs* and a *baqīyyah* in both treatises (*al-Adwār* and *al-Sharafīyyah*), with the notes in abjad as shown in Example 2. This is problematic though, because in the third chapter of *al-Adwār* (Urmawī [1235] 2001, 14; Wright 1978, 133, 191) he had approximated the size of *mujannab* with the ratio 16:15 (111.7 c and close to the Pythagorean apotome of 113.7 c, i.e., a limma plus a comma). Following him, Banayī ([1484] 1989, 15) chose the simpler interval 16:15 to represent all *mujannabs* in his listed species. In the Systematist treatises, *baqīyyah* is typically a limma (ca. 90.2 c) but sometimes a comma (ca. 23.5 c). The reason for such representation may be the fact that Urmawī ([1235] 2001, 18) considered a sequence of four *mujannabs* a cause of dissonance on the basis that it would exceed a perfect fourth. (In this case, it seems likely he was considering *mujannabs* of larger sizes.) Representing Species 1 in Example 1 (with the last interval of 92 c close to a limma) as a series of three *mujannabs* and a *baqīyyah* would conform better to the definitions provided by the Systematists.

[1.5] Shirazī (2008, 127) presents a different notation (the fourth tone being w (B^{\flat}) instead of z (B) in Example 2) for the *isfahān* tetrachord; here, the interval sizes are consistent with those of Species 2 in Example 1 and in line with the fact that the last interval is indeed a small *mujannab*. Yet, he shows the last interval as a *baqīyyah*, which is contradictory. The other Systematists repeat Urmawī's notations.⁽¹⁸⁾ It thus appears that the most accepted and presented form of *isfahān* tetrachord was a sequence of five tones (such as $G-A^{\flat}-B^{\flat}-B-C$) with the intervallic structure of JJJ \bar{B} , with some ambiguity in the size and designation of the last interval (mostly a limma but in some cases a limma plus a comma). As discussed in Section 2, this ambiguity persists to the present day.

[1.6] When listing the *adwār*, Urmawī and Shirazī present different scales for *isfahān*, as shown in Example 3 (Wright 1978, 75–76).⁽¹⁹⁾ Here, between the prominent tones that he marked, C and F, Shirazī uses the tone sequence that, despite appearing to represent the intervallic sequence JJJ \bar{B} (*isfahān* tetrachord), in terms of actual sizes (ratios) corresponds to JJJJ in Example 1. Maraghi ([1418] 1966, 68) presents two scales, referring to the one consistent with Urmawī's scale as *'aṣl* (authentic). Ladhiqī ([1485] 1939, 379) and Banayī ([1484] 1989, 51–54) repeat Urmawī's scale, with Banayī referring to a cycle made of two disjunct *isfahān* tetrachords as *shu'bah isfahān*. Jami (2000, 196) recognizes both Urmawī's and Shirazī's versions and refers to them as *isfahān* with a *baqīyyah* at the high end (*aḥad al-baqīyyah*) and *isfahān* with a *baqīyyah* in the middle (*waṣat al-baqīyyah*), respectively. All these *adwār* have one species in common and that is the peculiar *isfahān* tetrachord (JJJ \bar{B}) at the upper *ṭabaqah* (shelf or register) of the scale, which was the characteristic and the main species of *maqām isfahān* according to Urmawī (underlined in [1.3]).

2. *Dastgāh Isfahān according to the Twentieth-Century Musicologists*

[2.1] The *radīfs* of Persian art music contain hundreds of *gūshihs* (ranging from approximately 100 to 500; Nettl 1992, 5–7) that appear in several *dastgāhs*. Each *dastgāh* starts with a *darāmad* (introduction or entry), representing the "*maqām-i mādar*" (main or parent mode) of the *dastgāh* (Alizadeh et al. 1996, 33). The other *gūshihs* in the *dastgāh* may have different characteristics from the *darāmad* due to modal function variation or modulation. The main and basic theoretical

characteristics of each *gūshih* are its intervallic structure and degree functions. The characteristic degree functions are *āghāz* (A, the starting tone), *khātimih* (K, the ending tone or conclusion), *shāhid* (S, the prominent tone), *īst* (I, the temporary stop or dwelling tone), and *mutighayyir* (M, the variable tone). Other characteristics of *gūshih*s include their melodic range and progressions as well as the specific melodic patterns or motives employed (Zonis 1973, 47).

[2.2] Many musicologists have examined the modal scheme and degree functions of *isfahān* with varying theoretical perspectives or models.⁽²⁰⁾ To aid discussion, the modal schemes of *isfahān* formulated by selected prominent twentieth-century musicologists are presented in **Example 4**. The following points may summarize their approaches and opinions on the modal characteristics of *isfahān*:

- Different frameworks have been used to present the modal scheme of *isfahān*, such as the octave-based scale (by Hedayat 1938a and 1938b, Vaziri 1934, Khaleghi 1982 and 1999, and Barkeshli 1976), the conjunct tetrachord form (by Fakhreddini 2013, Kiani 1992, Alizadeh et al. 1996, Talai 1993 and 2017, and Hodjati 1998) and a series of ascending notes (by Farhat 1990, Massoudieh 1997 and 2003, and During 2006).
- Some musicologists recognize two modal schemes for *isfahān*: the *qadīm* (old; pre-twentieth century) and the *jadīd* (new; post-twentieth century). According to the most common interpretation, the scale forms for the old and the new *isfahān* can be notated (on C, as a common example) as $C^{K,S}-D-E_b-F-G-A^{\flat 1}-B^{\flat}-C$ (TBTT-JTJ) and $C^{K,S}-D-E_b-F-G-A^{\flat 1}-B-C$ (TBTT-JHB), respectively. The difference is in the status of $\hat{7}$ that makes two slightly different upper tetrachords, specifically *īraq* and *hijāz*.⁽²¹⁾ Hedayat (1938a and 1938b), who followed the nineteenth-century tradition, recognized only the old form as *isfahān* and called the new form *rāk* without mention of their relationship.⁽²²⁾ Vaziri (1934, Part 2, 158) believed the authentic form to be the old form and the new form to have been created under the influence of Western music. Some musicologists believe that the seventh tone should be played about a comma lower than the notated new form (During 2006, 300; Alizadeh et al. 1996, 70), producing an apotome last interval rather than a semitone. This issue, as discussed in [1.5], was also the dilemma for the Systematists.⁽²³⁾
- The main tetrachord in *isfahān* is the upper tetrachord (JHB in the “new” form) starting from $\hat{5}$, i.e. the *namāyān* (N) according to Vaziri (1934) and Khaleghi (1982 and 1999).⁽²⁴⁾
- The *shāhid* of *maqām isfahān* and of the *darāmad* in the *radīf* is $\hat{1}$. Note that this is not the case for all Persian *dastgāhs* or *maqāms* (such as *humāyūn* and *abū‘atā’*).
- *Isfahān* has two common *khātimih*s, namely $\hat{1}$ (*shāhid*) and $\hat{6}$ (or more accurately, the third below the *shāhid*). Ending on the *shāhid* (the tonic of the scale form) is the complete *khātimih* as it produces a sense of final rest and stability (*qarār*, a term used primarily in Arabic *maqāmāt*). Ending on $\hat{6}$ (which is $\hat{2}$ of *humāyūn* and its *shāhid* according to most musicologists) provides a sense of suspense or lack of completion (Massoudieh 1997, 105);⁽²⁵⁾ as such it may be better referred to as the *īst* (temporary conclusion) following Vaziri (1934, Part 2, 163), Farhat (1990, 12) and Pirniakan (2010, 222). The *āghāz* (starting tone) is typically either the tonic or the *namāyān*.
- A characteristic or common *mutighayyir*, as seen in some other *dastgāhs* such as *humāyūn*, *dashtī*, and *afshārī*, is not generally recognized in *isfahān*; the superscript M appears only on the modal schemes of Massoudieh (1997, 2003) and Talai (1993, 2017) in Example 4.
- The main modulation from *isfahān* to other *dastgāhs* is a modulation to *shūr*—or even to the *gūshih zābul* of the *dastgāh sigāh*—through the *gūshih ‘ushshāq* with a *shāhid* established on the *namāyān* of *isfahān* (Khaleghi 1982, Part 2, 163; Fakhreddini 2013, 311). Because its *shāhid* is on $\hat{8}$ of *humāyūn*, *‘ushshāq* acts as the *owj* (climax) of *isfahān* and *humāyūn* and moves the nucleus of activity to the first pentachord of *isfahān* (the Systematist *navā* that is changed to *rāst* upon raising $\hat{3}$ a quartertone). Another possibility is a modulation to *afshārī* through the *gūshih ruhāb*, which has a *shāhid* on $\hat{4}$, an *īst* on $\hat{3}$ (becoming a neutral 3rd instead of a minor 3rd) and a *khātimih* on $\hat{1}$ of *isfahān* (Fakhreddini 2013, 312). Returning to *humāyūn* as the primary *dastgāh* is, of course, part of the *dastgāh/radīf* tradition.⁽²⁶⁾ Some *gūshih*s in *isfahān* may resemble those in *humāyūn* and vice versa. For instance, a

dwelling (*īst*) on $\hat{2}$ of *isfahān* occurs in the *gūshih bayāt-i rāji*, which resembles the *gūshih bīdād* of *humāyūn* with a *shāhid* on $\hat{5}$ of *humāyūn* (Fakhreddini 2013, 306). The *khātimih* would typically be the distinctive point between the similar *gūshihs* in *humāyūn* and *isfahān* (Khaleghi 1982, vol. 2, 165).

3. Musical Analysis of *Gūshihs* and *Tasnīfs* in *Isfahān*

Methodology and Sources

[3.1] The statistical analysis of the *gūshihs* and *tasnīfs* in *isfahān*, in terms of the characteristic degree functions *āghāz*, *khātimih* and *shāhid*, was performed on three renowned *radīfs* and two *tasnīf* collections. The most prominent tones in terms of duration and frequency of appearance, as indicators of emphasis (Talai 2017, 23), were determined through statistical analysis. To this end, an eighth note was given a value of 1 unit for duration and the other notes were given proportional values. The notes were then tallied and used to establish tone distribution graphs. Similar methods have been used by Vaziri (1934, Part 2, 22), Wright (1992, 502), and Djafarzadeh (2013, 62) to determine the *shāhid*.⁽²⁷⁾

[3.2] The first source examined was the vocal *radīf* of Mahmud Karimi (1927–1984). This *radīf* was initially transcribed by Massoudieh in 1977, for which Arshad Tahmasbi (b. 1958) provided an instrumental response in 1995 by slightly modifying the notations (removing some of the vocal ornamentations, which would not affect my analysis). This study primarily relies on Tahmasbi's transcriptions for analysis, while checking those of Massoudieh. The other two *radīfs* examined were the vocal *radīf* of 'Abdollah Davami (1891–1980) and the instrumental *radīf* collected by Musa Ma'rufi (1889–1965). Faramarz Payvar (1933–2009) published a transcription of Davami's *radīf* in 1960, which was reportedly approved by Davami himself (Payvar 2011, 7–10). Ma'rufi gathered a large collection of *gūshihs* mostly attributed to the Farahani's brothers, Mirza 'Abdullah (1843–1918) and Aqa Hussayn Qoli (1853–1916), and published the collection in 1963.⁽²⁸⁾

[3.3] The two *tasnīf* collections examined were Davami's nineteenth-century *tasnīfs*,⁽²⁹⁾ transcribed by Payvar, and the twentieth-century *tasnīfs* gathered and published by Habibollah Nasirifar (2001). Some twentieth-century *tasnīfs* labeled as *isfahān* conformed to either the harmonic minor scale (i.e., tempered *isfahān*)⁽³⁰⁾ or the natural minor scale; I grouped these as "minor" (referred to as *mīnūr* in Iran) and analyzed them separately from those conforming to untempered *isfahān*. Examination of the prominent tones was carried out on a fraction of the untempered and tempered *isfahān* songs, and the songs in natural minor scale were excluded. Examination of the *āghāz* and *khātimih* was performed on all songs in the two groups.

Main *Gūshih* Types and a *Tasnīf* Example

[3.4] Karimi's *radīf* contains eleven *gūshihs* in *isfahān*, including two *darāmads*. **Example 5** shows the first *darāmād*. The first segment of the piece clearly introduces the *hijāz* tetrachord with emphases on $\hat{5}$ (D, *namāyān*) and the tonic (G). These two notes correspond to the prominent tones marked by Shirazi (2008), encompassing the Systematists *isfahān* tetrachord (Example 3). The rest of the piece shows melodic movement pivoting around $\hat{1}$. The two histograms in **Example 6** are essentially similar and indicate both that the most prominent tone (*shāhid*) is $\hat{1}$ and that the nucleus of activity is the *hijāz* tetrachord (as opposed to the other tetrachord of *isfahān*, i.e., *navā*, which in this piece would be from G4 to C5). **Example 7** presents the tone duration of every *gūshih* in order, showing a progression of *shāhid* from $\hat{1}$ to $\hat{5}$ and then back to $\hat{1}$. The progression of *shāhid* is more clearly demonstrated in **Example 8**, which exhibits an overall arch-shaped progression particularly in terms of tone duration.⁽³¹⁾

[3.5] The second *gūshih* to be treated is *bayāt-i rāji* as it appears (with some variance) in the three *radīfs* examined in this study. Karimi's version is a relatively long piece with a short range of notes between $\hat{1}$ and $\hat{6}$ of *isfahān* that can be divided into five parts alternating between two distinguishable modes. The initial, representative phrases of Part 1 and the entire Part 2 are shown in **Example 9**. The main mode (Parts 1, 3, and 5) is that of *bayāt-i rāji* with an indistinct *shāhid*

between $\hat{2}$ and $\hat{4}$ (**Example 10**; with some emphasis on $\hat{2}$ in Part 1), a predominantly minor 3rd tone (occasionally changing to a neutral 3rd) and an *īst* (the ending note of each part) on $\hat{2}$ of *isfahān*. The indistinct prominence among three consecutive tones is likely a result of a dual emphasis on $\hat{2}$ and $\hat{4}$, which results in frequent passages through $\hat{3}$. The second mode (Parts 2 and 4) exhibits very distinct *shāhid* (**Example 10**) and *īst* on $\hat{4}$ as well as a characteristic neutral 3rd tone consistent with the lower tetrachord of the Systematist *isfahān*. The most prominent tone of the entire piece was $\hat{4}$ as well (**Example 11**). The main tetrachord and the center of activity in all parts is formed between $\hat{1}$ and $\hat{4}$ (i.e., predominantly *navā* for Mode 1 and *rāst* for Mode 2).

[3.6] **Examples 12 and 13** show the main part of the *gūshih bayāt-i rāji'* in Davami's *radīf* along with its tone distribution curves. This piece also exhibits a somewhat indistinct emphasis on $\hat{2}$, $\hat{3}$, and $\hat{4}$ (**Example 13**), but with phrase endings on $\hat{2}$ throughout the piece. Therefore, Karimi's and Davami's versions of *bayāt-i rāji'* exhibit a characteristic *īst*, but a somewhat indistinct *shāhid*, on $\hat{2}$, and a nucleus of activity in the first tetrachord of the scale with a (predominantly) minor $\hat{3}$.

[3.7] Ma'rufi presents two *gūshih*s of *bayāt-i rāji'*. The first piece is similar to Davami's version of *bayāt-i rāji'* in terms of phrase endings (including the *khātimih*) on $\hat{2}$ as well as the overall tone distribution curves. The second piece (**Example 14**), however, conforms best to modern descriptions of *bayāt-i rāji'* ([2.9]; As'adi 2008, 49); i.e., it exhibits distinct prominence on $\hat{2}$ (**Example 15**). The second piece ends on $\hat{1}$ of *isfahān* (which can be considered a cadence or *furūd* to the *maqām isfahān*), as opposed to $\hat{2}$ as in the other examples. These two examples by Ma'rufi demonstrate the two types of *khātimih* in *bayāt-i rāji'*, as also pointed out by Fakhreddini (2013, 306).

[3.8] The third *gūshih* type to be examined concerns a number of *gūshih*s in *isfahān* that exhibit a significant emphasis on $\hat{4}$ of *isfahān*; this is especially notable, in that there is rarely a mention or explicit demonstration of a $\hat{4}$ *shāhid* in *isfahān* in the literature.⁽³²⁾ In addition to the second mode identified in Karimi's *bayāt-i rāji'* (**Example 9**), two *gūshih* examples with some emphasis on $\hat{4}$ include Davami's *gūshih 'irāq* (**Examples 16 and 17**) and Ma'rufi's *gūshih hazīn* (**Examples 18 and 19**). The *gūshih 'irāq* exhibits a very clear emphasis on $\hat{4}$ (**Example 17**) and a neutral $\hat{3}$ (*rāst* tetrachord). The *gūshih hazīn*'s emphasis, on the other hand, is less distinctive (rivaled by $\hat{3}$; **Example 19**) and appears with a minor $\hat{3}$ (*navā* tetrachord). Both examples ended on $\hat{2}$ of *isfahān*, which is to say an *īst* or incomplete conclusion with respect to *isfahān*.

[3.9] A representative example of a *tasnīf* in *isfahān* is the nineteenth-century composition by Ali-Akbar Shayda (1843–1945) known as “*ey mah-i man*” (O' My Moon) or “*but-i chīn*” (the Chinese Idol). The piece is usually followed by a *ring* (also transliterated as *reng*), a fast-tempo, typically-instrumental dance piece. A simplified notation of the *tasnīf* along with the tone distribution curves for the *tasnīf* and the *ring* are presented in **Examples 20 to 22**.⁽³³⁾ The *tasnīf* can be divided into three sections, each comprising a verse (solo) and the refrain (chorus). Sections A and B are generally similar and represent the basic *maqām* of *isfahān* with a *shāhid* on $\hat{1}$ (**Example 21**) and a minor $\hat{3}$. The verse of section C (mm. 45–50) can be considered a modulation to ‘*ushshāq (owj)*’ with a *shāhid* on $\hat{5}$, a neutral $\hat{3}$, and an ending on $\hat{1}$. The second part of Verse 3 (mm. 51–54) returns to the basic mode of *isfahān*. All three sections have an *īst* on $\hat{6}$ (a third below the *shāhid*). The piece ending on $\hat{6}$ leaves the listener in waiting for another piece, the *ring*, that ends on $\hat{1}$ (the main *khātimih* of *isfahān*) and provides a sense of resolution and completion. The *shāhid* of the *ring* is also $\hat{1}$ (**Example 22**), consistent with basic *maqām isfahān*.

Degree Functions in the Analysed Sources

[3.10] **Examples 23 to 26** summarize the scale-degree function distributions in the *gūshih*s and *tasnīf*s from the selected Persian sources. The *āghāz* was most frequently $\hat{5}$, $\hat{1}$, or $\hat{4}$ (**Example 23**). This distinguishes it slightly from its Western counterpart (i.e., the harmonic minor mode as examined in a selected repertoire but not presented here for reasons of brevity), in which $\hat{3}$, not $\hat{4}$, frequently serves also as a starting tone.⁽³⁴⁾ It is quite possible that the significant reduction of an *āghāz* on $\hat{4}$ in Nasirifar's twentieth-century *tasnīf*s compared to the nineteenth-century *tasnīf*s is a

result of Western music influence. The *khātimih* was in most cases $\hat{1}$ (followed by $\hat{5}$) in Karimi's *radif* and Nasirifar's *tasnīfs* (Example 24), whereas a *khātimih* on $\hat{1}$ was less predominant in the other two *radīfs* and in the nineteenth-century *tasnīfs*; instead, $\hat{6}$ and/or $\hat{2}$ frequently appear as the concluding tone. A conclusion on $\hat{2}$, similar to one on $\hat{6}$, can be considered a temporary/incomplete stop (i.e., *īst*) or a complete stop for a mode established on $\hat{2}$ of *isfahān* (i.e., its first scalar transposition, as discussed in [5.8]).

[3.11] Although there was some progression of the *shāhid* among the *gūshihs* (as demonstrated for Karimi's *radif* in Example 8), Example 25 shows that the most prominent tone remained predominantly $\hat{1}$ in the selected *radīfs*. The predominance of *shāhid* on $\hat{1}$ was most pronounced in Davami's nineteenth-century *tasnīfs*. In contrast, the predominance decreased in the twentieth-century *tasnīfs*, where $\hat{3}$ and $\hat{5}$ were often the most prominent tones, overall. This change may again be due to Western music influence, where members of the tonic triad are generally most prominent.

[3.12] Example 26 shows the results of the analysis of the twentieth-century *tasnīfs* that were in the minor mode (mostly harmonic minor) but labelled as *isfahān* in the collection. The *āghāz* was most frequently $\hat{1}$ or $\hat{5}$, as was also the case for the untempered *isfahān* (Example 23). The *khātimih* was also predominantly $\hat{1}$, but with no occurrence on $\hat{6}$. Similarly, *shāhid* was most frequently $\hat{1}$ or $\hat{5}$, with an increase in the percentage of $\hat{5}$ (i.e., the dominant in the minor mode). Overall, it may be concluded that the pieces in tempered *isfahān* showed relatively similar characteristics to those in untempered *isfahān* in Nasirifar's collection (as well as the Western art pieces examined; see note 34).

4. *Isfahān* Counterparts in Arabic and Turkish Musical Systems

[4.1] Since *isfahān* is a very popular musical mode in Iran and its scale is very close to the harmonic minor scale, it is natural to ask whether there is a (popular) mode similar or close to *isfahān* in the Arabic *maqāmāt* or the Turkish *makams*. These are three closely related musical systems with common theoretical roots in the Systematist treatises. A thorough examination of these musical systems is beyond the scope of this investigation, but the results of a preliminary inquiry centering on a few selected sources will be presented here.

[4.2] The main counterpart *maqām* to the Persian *isfahān* in Arabic music (at least in the scale form) appears to be *nahāvand* (or *nahāvānd*).⁽³⁵⁾ In all classifications of the principal Arabic *maqāmāt*—which may vary from 8 to 12 octave species in the treatises of the last century—*nahāvand* is included (Marcus 1989, 333). Muallem (2010, 120–137) presents *maqām nahāvand* within the *nahāvand* family, consisting of *nahāvand*, *farahfazā*, *'ushshāq miṣrī*, *būsalīk*, *nahāvand murassa'*, and *sultānī yakāh*; all of these begin with a *nahāvand* species. With a variable (*mutighayyir*) $\hat{7}$ (Example 27), *nahāvand* is identical to the harmonic minor scale in ascending order and to the natural minor scale in descending order. Therefore, the primary *ajnās* (genera or species) of the scale are the disjunct tetrachords *nahāvand* (TBT; equivalent to the medieval *navā*) and *hijāz* (BWB; the tempered medieval *hijāz*) in ascent and the disjunct tetrachords *nahāvand* and *kurd* (BTT; the medieval *būsalīk*) in descent. When a cadence from $\hat{8}$ to $\hat{4}$ is emphasized, an upper pentachord of *navā-athar* (TBWB) emerges, which may be considered a tempered medieval *nayrīz* (TJHB).⁽³⁶⁾ Marcus's (1989, 215, 623) description of *maqām nahāvand* is similar to that of Muallem (2010). Both explain that there have been disputes among scholars not only on the basic form of *maqām nahāvand*, but also on how to interpret its variations (mostly on the upper tetrachord). It is clear that the basic ascending scale of *nahāvand* is similar to the tempered *isfahān* (Example 27). One difference is perhaps the main species in the basic forms of the two *maqāms* appears to be the lower tetrachord (*navā*) in *nahāvand* but the upper tetrachord (*hijāz*) in *isfahān* (specifically the *darāmad*). Muallem also demonstrates that the fourth reposition of the basic scale of *nahāvand* (with a major $\hat{7}$) forms the scale of *hijāz-humāyūn*. The modern Persian *isfahān* and *humāyūn* have a similar relationship.

[4.3] Signell (2008, 32–34) presents the Turkish *makam puselik* (also referred to as *buselik*) with a scale similar to those of the Persian *isfahān* and the Arabic *nahāvand* (Example 27). He considers *puselik* as

one of the thirteen “basic scales” of the Turkish art music, made of a lower *puselik* pentachord (TBTT; the medieval *navā*)⁽³⁷⁾ and an upper *hicāz* tetrachord (J₁HJ₁)⁽³⁸⁾ the modified medieval *hijāz*). No variable tone is marked by Signell. Although Signell does not explicitly identify a *makam* as *isfahān*, he mentions *isfahān* on a few occasions. On one occasion, he mentions *isfahān* as a “passing modulation” from *hicaz-hümayun* (81) but does not provide its modal scheme explicitly. Aydemir (2010, 84), on the other hand, presents both the Turkish *makams buselik* and *nihavent* (a variation of the word *nahāvand*) as well as *isfahan*. Aydemir presents *makam buselik* in two forms. The first form is made of a lower *buselik* pentachord (TBTT) and an upper *kurdī* tetrachord (BT). The second form is very close to the scale presented by Signell (Example 27); the only difference is $\hat{6}$ (F) that is a comma higher in Aydemir’s scale (F \sharp), which is likely the correct notation based on the interval sizes presented even by Signell. Aydemir (87) explains that *nihavent* is basically a transposition of *makam buselik* (with the two forms) from A to G.

[4.4] The basic form of Turkish *makam isfahan*, according to Aydemir (2010, 149), comprises a lower *uṣṣak* tetrachord (J₂J₁T; the medieval *nowrūz*), and an upper *buselik* pentachord (TBTT). He explains that the variations of scale degrees $\hat{2}$ and $\hat{3}$ (i.e., changing the lower tetrachord to *rāst*) is a characteristic of the Turkish *makam isfahan*. Based on this definition, the Turkish *makam isfahan* does not contain a tempered or untempered *hijāz* tetrachord. As shown in Example 27, the common species between the Turkish *makams buselik/puselik* (as well as the transposed form *nihavent*) and *isfahan* is the *navā* pentachord TBTT (referred to as *buselik* in the contemporary Turkish music). This pentachord also appears to be the main species in the Arabic *maqām nahāvand* and the lower (but not the main) species of the Persian *maqām isfahān*. Although the *navā* tetrachord/pentachord was not the main species of the *darāmad* of *isfahān*, it assumed the nucleus of activity (including the *rāst* tetrachord/pentachord upon the third-tone variation) in many other *gūshih*s, such as *bayāt-i rāji*, *sūz-u gudāz*, *owj/’ushshāq*, *hazīn*, *kirishmih*, *ruhāb*, *shāhkhatāyī*, and *’irāq*. The comparisons made in this preliminary evaluation indicate that, despite some differences, there are many connections among the three musical systems that merit further investigation.

5. Further Discussion

Medieval *Isfahān* and its Evolution

[5.1] As discussed in section 1, the most consistent form of the *dawr isfahān* among the Systematists was the cycle presented initially by Urmawi ([1235] 2001), and comprising a lower *rāst* tetrachord and an upper *isfahān* pentachord. Although Urmawi’s 84 listed *adwār* were established mathematically by permuting all combinations of an upper pentachord to a lower tetrachord, this does not necessarily mean that practitioners regarded the tone between the two species as prominent. It is likely that the *dawr* would simply represent the intervallic structure of the *maqām*. The failure to mark the prominent tones in the cycles is a shortcoming of Urmawi’s permutative theoretical approach that unfortunately was replicated by most Systematists. Due to this condition, two possibilities for the position of the prominent tone should be considered: the fourth degree (i.e., a cycle made of a *rāst* tetrachord and an *isfahān* pentachord) and the fifth degree (a cycle made of a *rāst* pentachord and an *isfahān* tetrachord).

[5.2] Shirazi (2008), in contrast, marks the prominent tones of the *adwār*, which makes his account more informative. For the *dawr isfahān*, he marks the tones at the two ends of the *isfahān* tetrachord (Example 28). However, his version of the *dawr isfahān* is slightly different from Urmawi’s. Shirazi’s cycle can be considered a *dawr* established on $\hat{2}$ of Urmawi’s *dawr isfahān* (Form 1 in Example 28: transposed). Rearranging the cycle so that a prominent tone occurs at the beginning of the scale (i.e., a scalar transposition or reposition) yields the second form in Example 28 with a lower *isfahān* tetrachord and an upper *rāst* pentachord. This form, identified as *muhayyir-i zirkish* by Shirazi (134), is consistent with the contemporary *maqām humāyūn* (also presented in Example 28) in terms of the intervallic structure and the prominent tones, with one slight modification, namely the omission of the third tone of the lower *isfahān* tetrachord (JJJB) that changes it to *hijāz* (JHB). This modification makes the octave species heptatonic, which has been the conventional scale form in Iran, as well as

the rest of Western Asia. These accounts give evidence of the close relationship between the *adwār humāyūn* and *isfahān*. The two versions of the *dawr isfahān*, as also examined by Wright (1978, 76), may reflect a question among the Systematists on how to present the octave species of *isfahān*. As mentioned in Section 1, Jami (2000) presented both Urmawī's and Shirazī's cycles.

[5.3] The ambiguity in the order of the tetrachord and pentachord also appears in Hedayat's (1938b) modal scheme of contemporary *humāyūn*, since it uses the intervallic structure JJT–JHBT. (Example 28) and the *hijāz* species appears in the upper pentachord. His order of the two species is opposite of how the scale of *humāyūn* is typically shown (the row above Hedayat's in Example 28). Hedayat did not clearly indicate the ending tone (a *khātīmih* or a "*mahatt*," which he considered a criterion for establishing the *dawr*) for each "*zamīnih*" or scale he listed. For those he marked the concluding tone with an *x*, while discussing them in the text these were typically either $\hat{1}$ or $\hat{4}$ of the modal scheme (Hedayat 1938b, Part 3, 31). This means that the order of his listed species, perhaps in similar manner to the Systematist *adwār*, does not necessarily indicate whether $\hat{1}$ or $\hat{4}$ is the tonic (the typical concluding tone) in the modern concept of scale.

[5.4] A few additional *adwār* listed by Shirazī (2008) merit mention, as well. One is the *dawr hijāz* (Example 28) that, when rearranged to have one of the prominent tones as degree $\hat{1}$, becomes the contemporary *humāyūn* readily, without a need to omit any extra tone. The rearranged form becomes the cycle Shirazī (134), listed as *nahuft-i hijāz*. The other cycle relevant to our discussion is *zangūlih*, for which Shirazī explains that it is also called *nahāvand* by some. This cycle appears to be in between the contemporary Arabic *nahāvand* or Persian *isfahān* (Example 27) and the Systematist *isfahān*; it can be considered a cycle made of conjunct *rāst* and *hijāz* tetrachords, whereas the Systematist and the contemporary *isfahān* can be considered a cycle comprising disjunct *rāst/navā* (as variations) and *hijāz* (or the original *isfahān*) tetrachords. These observations attest to the relationships between the medieval *adwār isfahān*, *humāyūn*, *hijāz*, and *nahāvand*. **Example 29** summarizes these relationships for *isfahān*, *humāyūn*, and *hijāz* and presents their possible evolution paths to the contemporary *maqāms*. They all appear to have roots in the peculiar, "singular" *isfahān* tetrachord with five tones and four intervals, from which either the *isfahān* and *humāyūn* pentachords can be established or the *hijāz* tetrachord (with the conventional three intervals and four tones) can be derived.

[5.5] To facilitate tracing the possible evolutionary steps of the *dawr/maqām isfahān*, **Example 30** presents all the discussed octave species of *isfahān* in staff notation, along with the two suspected alterations or variations. The first form collectively comes from the Systematist accounts. The scale is basically Urmawī's *dawr isfahān*—referred to as the authentic *isfahān* by Maraghi—with the prominent tones indicated by Shirazī (i.e., those enclosing the *isfahān* tetrachord). In the absence of any other or contradictory information, and as proposed by Wright (1978, 76), it is reasonable to assume that the same prominent tones would apply to Urmawī's scale as well. These prominent tones are also consistent with those in the contemporary form of *isfahān* (specifically the *darāmad*), namely scale degrees $\hat{1}$ and $\hat{5}$ (*shāhid* and *namāyān*). The next two forms represent possible variations. There is some historical evidence for the substitution of the *isfahān* tetrachord with the *hijāz* tetrachord (i.e., the first variation in Example 30). In his *Risālih dar Mūsīqī* (Treatise on Music), the fifteenth-century scholar from the Timurid Herat (today's Afghanistan), Banayī ([1484] 1989, 34), refers to the species of fifth with the intervallic structure JJJBT as *humāyūn*, with the provision that the last *tanīnī* is omitted; this becomes the *isfahān* tetrachord at a position a fourth above the original position of *isfahān*. On the other hand, a near contemporary in the Ottoman empire, Ladhiqī ([1485] 1939, 451), provides an example for *humāyūn* melody in his *al-Risālah al-Fathīyyah* (Book of Conquest) that demonstrates the JHB tetrachord as its core species.⁽³⁹⁾ Similar core species (JHB) is also assigned to *humāyūn* as well as *nayrīz* (a branch of *isfahān*) in the sixteenth-century treatise *Taqṣīm al-Naghamāt* (Wright 2019, 72). An important point to reiterate here is that Urmawī did not recognize the interval H in constructing the tetrachord and pentachord species, nor did he recognize the *hijāz* tetrachord JHB. Therefore, every species that could contain the *hijāz* tetrachord (JHB) appeared either with the five-tone *isfahān* tetrachord or the *'irāq* tetrachord (JTJ).

[5.6] The evidence for Variation 2, which replaces the *rāst* tetrachord/pentachord with *navā*, can be found in an early post-Systematist treatise, *Taqṣīm al-Naghamāt* (Distribution of Notes), written by

an anonymous musician/scholar in the mid-sixteenth century Safavid Iran. Although the scholar does not present the complete scale of any *maqām*, he provides their melodic contours in short formulae on the instrument *nay* (reed flute), which makes his account outstanding compared to the other treatises from this period. For *isfahān*, he presents a series of notes (Wright 2019, 53, 362) that in Western notation on G would be: G, B \flat , A, G, F \sharp , F, E \flat , F, E \flat . If the notes are placed in the ascending order, the following “scale” (conjunct species around G) will emerge: [D]–E \flat ^{K,I}–F–F \sharp –G^A–A–B \flat –[c]. I have added the terminal notes D (*dugāh* in the treatise’s terminology) and c (*yigāh/rāst*), to cover two complete tetrachords; the two added notes appeared in the melodic formula of one of the *shu’ab* (branches) of *maqām isfahān*, i.e., *nayrīz*, in *Taqīm al-Naghamāt* (Wright 2019, 57, 375). In the above scalar form, I have also identified by superscripts the starting tone (*āghāz*) that was repeated (likely a sign of emphasis, i.e., possibly also the *shāhid*) and the ending tone (i.e., the *īst* or the *khātimih*). The repetition of the last two notes in the contour (F and E \flat) may suggest a simple cadence formula. It is interesting to see that the *īst/khātimih* (*sigāh* in the treatise’s terminology) is a neutral third below the *āghāz/shāhid* (*panjgāh*), which is still practiced in the contemporary *isfahān* and was the main *khātimih* in the 19th-century *tasnīfs* (Example 24). The octave scale form would eventually take shape as shown in Variation 2 in Example 30, with a lower *navā* pentachord (TBT) and an upper *isfahān* (JJJB) tetrachord.⁽⁴⁰⁾ As demonstrated in Section 3, the earlier status of scale degree $\hat{3}$ (a neutral 3rd) appears in some *gūshih*s of the *dastgāh isfahān*, and, as such, there is some justification for considering a *mutighayyir* on $\hat{3}$ in *isfahān*. This tone (becoming $\hat{6}$) is a distinctive *mutighayyir* in the *dastgāh humāyūn*.

[5.7] What is typically referred to as *isfahān-i qadīm* by the twentieth-century musicologists (Row 4 in Example 30) that exhibited an upper ‘*irāq* tetrachord (JTJ) instead of the *hijāz* tetrachord is likely a variation/ambiguity of the last interval size that apparently has a historical precedent (Example 2). The return and stabilization of a semitone as the last interval (Row 5 in Example 30) may have been promoted and supported by the spread of Western music (harmonic minor in Row 6) in Iran in the twentieth century. Even so, Westernization should not be considered the cause of the change, as the exact position of the “leading tone” appears to have been unclear even in the Systematist treatises, while including a semitone (*baqīyyah*) as the last interval appeared to be the most prevalent form.

Maqām Isfahān and its Repositions

[5.8] The analyses in this investigation have revealed that the contemporary scale of *isfahān* can be formulated as shown in **Example 31** for the scalar *yigāh* (the base scale),⁽⁴¹⁾ with the main and characteristic degree functions (*shāhid*, *khātimih*, *āghāz*, *mutighayyir*, *namāyān*, and *īst*) as marked by the superscripts. In general, based on the concept of reposition or scalar transposition, any degree of a scale can take the role of the tonic/*khātimih* and/or the *shāhid*. However, the *shāhid* in *dastgāh isfahān* (i.e., among the *gūshih*s in the *radīfs*) is established on $\hat{1}$ (e.g. *darāmad* and *sūz-u gudāz*), on $\hat{2}$ (e.g. *bayāt-i rāji’* and *jāmihdarān*), on $\hat{4}$ (e.g. ‘*irāq* and *ruhāb*) or on $\hat{5}$ (‘*ushshāq/owj*). The repositions on the other degrees, therefore, are basically theoretical; as such, no *maqām* or *gūshih* example is provided for them in Example 31. Readers may further note that the repositions beyond the scalar *panjgāh* in Example 31 essentially coincide with (an octave higher of) the scalar *dugāh* through the scalar *chahārgāh* of *humāyūn* (see Poorhaydari 2025). In establishing the scalar transpositions, a slight change in the status of $\hat{3}$ (*mutighayyir*), or sometimes $\hat{6}$ or $\hat{7}$, was made in order to either conform to the *radīf* traditions or to ensure that either a perfect fourth or a perfect fifth interval is achieved.

[5.9] Two noteworthy characteristics in the scale forms presented in Example 31, which are not emphasized adequately in the literature, are the *mutighayyir* on $\hat{3}$ and the *shāhid* on $\hat{4}$ (the scalar *chahārgāh*). A common interpretation is that a neutral $\hat{3}$ is associated with certain *gūshih*s that originate from other *dastgāh*s (as suggested by their titles, i.e. ‘*ushshāq* from *shūr* and *ruhāb* from *afshārī*) and facilitate modulation to the other *dastgāh*s. Once it is established that the earlier Systematist form of *isfahān* was established with a lower *rāst* tetrachord/pentachord (with a neutral $\hat{3}$), it becomes conceivable that these *gūshih*s are internal (rather than external) to the *dastgāh isfahān* and possibly originating from the medieval form. In addition, the idea that most *gūshih*s with a

shāhid on $\hat{4}$ (and a neutral $\hat{3}$) originate from other *dastgāhs* may be why most literature does not recognize a *shāhid* on $\hat{4}$ in *isfahān*. Another reason could be that *isfahān* is typically interpreted with respect to *humāyūn*, thus a *shāhid* on $\hat{4}$ of *isfahān* would translate to a *shāhid* on $\hat{7}$ of *humāyūn*. Although a *shāhid* on the fourth degree of a modal system is common in the *dastgāh* tradition (e.g. *abū'atā'* in *shūr* or *chakāvāk* and *shūshtarī* in *humāyūn*), a *shāhid* on $\hat{7}$ is not. In fact, the statistical analysis of *shāhid* in the *dastgāh humāyūn* (i.e., within the same five sources as examined in this study) revealed nearly no prominence on $\hat{6}$ or $\hat{7}$ of *humāyūn* (Poorhaydari 2025); the same was observed in Example 25 for *isfahān*. It may be said that a *shāhid* on $\hat{4}$ in *isfahān* gives this *maqām/dastgāh* an independent character, compared to *humāyūn*.

[5.10] The Systematists, for the most part, did not discuss the scalar transpositions of the famous cycles.⁽⁴²⁾ They generally adopted a purely mathematical approach, most likely not shared by practitioners, that listed the *adwār* based on combinations of the seven recognized tetrachords and the twelve or thirteen recognized pentachords. As a result, the scale notations started from the open string (*naghmah alif*). However, a search in the listed cycles finds the *adwār* presented in **Example 32** for repositions of the Systematist *isfahān*. The second scale, *zindihrud*, has the intervallic structure of Shirazi's *dawr isfahān* (Example 28). The third scale, generally known as *gavāsht*, was also referred to as *isfahānak*. The title of the fourth scale, *gardānīyā*; or *gardānīyih*, was also used by Shirazi (2008, 128) to refer to the upper pentachord of the scale (JBTJJ). As a *dawr*, *gardānīyā* had several forms. The title of the fifth scale (generally unnamed in the Systematist treatises) was suggested by Shirazi (135).⁽⁴³⁾ It is hard to imagine that such scalar transpositions were not of interest to the practitioners, even though very little information on their significance and application in the performance of *isfahān* in the past is available.

Conclusions

[6.1] The historical and theoretical examinations of *maqām isfahān* in this article lead to the following conclusions:

1. The relationship between *Isfahān* and *humāyūn*, which has changed in nature over centuries, can be traced in the Systematist treatises, with *isfahān* being the main species (tetrachord) and one of the "famous cycles." The main species in both *maqāms* has been the peculiar *isfahān* tetrachord (JJJB) that appears to have been replaced by the *hijāz* tetrachord (JHB) upon the omission of the third tone (as J + J = H). This change would make the octave species heptatonic.
2. The melodic progression of the *gūshihs* in the *dastgāh isfahān* is based on the movement of the prominent tone, *shāhid*, from $\hat{1}$ (in *darāmad*) to $\hat{5}$ (in *owj* of *humāyūn*) and back to degree $\hat{1}$ of *isfahān*. The examination of the *radīfs*, as well as the literature on the *radīfs*, revealed the presence of some *gūshihs* with a *shāhid* on $\hat{4}$, although not explicitly mentioned or discussed in most literature.
3. The main variable tone, *mutighayyir*, is $\hat{3}$ of *isfahān* ($\hat{6}$ of *humāyūn*). A neutral 3rd, instead of a more common minor 3rd, is consistent with the "authentic" form of *isfahān* (*isfahān-i 'asl*) according to the Systematists. This form is used mostly in the *gūshihs* of the *radīfs* with a *shāhid* on $\hat{4}$ or $\hat{5}$ of *isfahān*, facilitating modulations to the other *dastgāhs* (e.g. *afshārī* and *shūr*).
4. A conclusion (*khātimih*) on $\hat{6}$ of *isfahān* ($\hat{2}$ of *humāyūn*) can be considered an *īst*, usually to be followed by another piece in *isfahān* with a complete conclusion and resolution on the tonic/*shāhid* of *isfahān*. In practice, ending on $\hat{6}$ would also give *isfahān* a distinctive feature and a reminder of its relationship to *humāyūn*, as this tone is usually regarded as the *shāhid* of *humāyūn's darāmad*.
5. The starting tone, *āghāz*, varied in the *radīfs* and *tasnīf* collections, appearing mostly as the degrees $\hat{5}$ and $\hat{1}$, followed by $\hat{4}$.
6. The comparison between the (collectively determined) Systematist scale of *isfahān* and the contemporary form reveals that the two scales are not very different. The Systematist cycle can turn into the contemporary *isfahān* upon two slight changes or variations, namely a quartertone lower $\hat{3}$ and the omission of $\hat{7}$, for both of which there is some historical evidence.

7. Despite the common interpretation (or suspicion) that the twentieth-century *isfahān* with a semitone last interval and typically referred to as *isfahān jadīd* results from Westernization, examination of the medieval octave species of *isfahān* showed that such last interval was part of the *dawr isfahān* based on its most common notation. It is suggested here that the nineteenth-century version, typically referred to as *isfahān qadīm*, was a minor variation that had some historical precedent.
8. A comparison between the nineteenth-century and twentieth-century *tasnīfs* reveals an increase in the first-degree *āghāz* (at the expense of the fourth-degree *āghāz*), an increase in the first-degree *khātimih* (at the expense of the sixth-degree *khātimih*), and an increase in the third- and fifth-degree *shāhid* (at the expense of the first-degree *shāhid*) in the twentieth-century composed songs in *isfahān*. These changes might have been promoted by Westernization and the spread of harmonic minor scale in Iran.
9. A preliminary examination reveals that the counterparts of the contemporary *maqām isfahān* in the Arabic and Turkish musical systems are *maqāms nahāvand* and *puselīk/buselīk*, respectively.

[6.2] In conclusion, I hope that this investigation has shown that, upon careful analysis and comparison, connections can be made between the Systematist modal cycles and the contemporary *dastgāhs/maqāms*. With the two related articles published on *isfahān* and *humāyūn* (Poorhaydari 2025), this project is completed. The next step is an examination of the other Persian *dastgāhs*, perhaps with a similar methodology. There is significant amount of information in the Systematists treatises that can serve as clues on the roots and evolutionary stages of the current modal systems. The historical study can also help with determining relations among the three neighboring musical cultures, namely Persian, Arabic and Turkish.

Glossary of Terms

In this section, simple (or simplified) meanings are listed for Persian and Arabic musical terms used in this article as a reference for the readers not familiar with Persian Music. Note that some musicologists may consider somewhat different meanings for these terms and some of the terms have different meanings in different contexts.

āghāz: the starting tone

ajnās (sing. *jins*): genera or species

āvāz: a secondary/derivative grouping in *radīf*

baqāyiyah: (approximately and typically) a semitone

darāmad: introductory piece in *radīf*

dastgāh: a modal system; a primary grouping in *radīf*

dawr (pl. *adwār*): cycle

gūshih: a piece in *radīf*; a modal sample

īst: the temporary stop or dwelling tone

jadīd: new

khātimih: the ending tone or conclusion

maqām: mode

mujannab: (approximately) a three-quarter tone

mulāyim: consonant

mutighayyir: the variable tone
namāyān: dominant
owj: climax
qadīm: old
radīf: ordered repertoire of Persian art music
shāhid: the prominent tone
shu'bah (pl. *shu'ab* or *shu'abāt*): branch
tarkīb: combination
tasnīf: composed song
tanīnī: a whole tone

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Footnotes

- * I would like to express my gratitude to the reviewers for their valuable comments that helped improve the quality of this article.
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1. For more information on the *radīf*, its history and its main sources, see [Tsuge 1974](#) (29), [Nettl 1992](#) (4) and [Khaleghi 1999](#) (Part 1, 114).
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2. The term *isfahān* refers to the ancient city Isfahan (also transliterated as Esfahan) in Central Iran.
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3. A statistical survey of modes ([Poorhaydari 2025](#)) in a large collection of contemporary Iranian songs (with 354 pieces) revealed that approximately 30% of the songs were in the mode of *isfahān* and 11% were in *humāyūn*. Interestingly, according to Ibn Sina ([Farmer 1929](#), 203), *isfahān* was a popular mode in the eleventh century as well.
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4. The term Systematist was used by the European writers to refer to the scholars in the Muslim world from the thirteenth through the fifteenth century, who had significant contributions to the systematization of the musical intervals and cycles ([Farmer 1929](#), 206; [Farmer 1965](#), x; [Wright 1978](#), 1; [Shiloah 1995](#), 55).
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5. Each *dawr* (pl. *adwār*) was basically an octave species, made of two conjunct or disjunct tetrachords or a tetrachord and a pentachord.

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6. *Humāyūn* was identified as a *tarkīb* (combination) by the thirteenth-century scholar Qutb al-Din Shirazi (2008, 149) and one of the 24 *shu'abāt* (branches) by the fifteenth-century scholar 'Abd al-Qadir Maraghi ([1418] 1966, 64). It is not known when *humāyūn* became a main *maqām* or *dastgāh*. One piece of information comes from an anonymous and undated treatise, referred to as *Bihjat al-Qulūb* and believed by Khazrayi (2013, 157) to be written between the seventeenth and the nineteenth centuries (or more specifically the mid-eighteenth century according to Pourjavady 2019, 114), that consider *humāyūn* as one of the four main *dastgāhs*. In the mid-sixteenth century Iran (Wright 1978, 53, 61), *isfahān* was still one of the twelve "*maqāms*", whereas *humāyūn* was one of the branches.

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7. It should be acknowledged that the characteristics of the contemporary *isfahān* were examined briefly and comparatively within four selected *radīfs* by As'adi (2008).

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8. Nettl 1972 is a good example of a study of the performance aspects of a *dastgāh* (i.e., *chahārgāh*), in terms of interpretative use of *gūshih*s (their orders and lengths), with a focus on *darāmad*, as well as the extension and the meaning of "improvisation," in the performances of several musicians.

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9. Fakhreddini (2013, 99) wrote that the *radīfs* of the contemporary music of Iran has missing links to the old *maqāmāt*, which should be discovered and placed in their true positions in order to attain what we (Iranians) had in the past.

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10. See, for instance, Farhat 1990, 5; Mohammadi 2001, 52; Zonis 1965, 637; and Pourjavady 2001, 82.

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11. As examples of musical writings in this period, see *Bihjat al-Rūh* (Ibn Safi al-Din 1967) and the two treatises, *Risālah-yi Karāmiyyah* and *Risālah-yi Mūsīqī*, examined by Fallahzadeh (2009). Upon examining the major treatises in the post-Systematist period, Pourjavady (2019, 108) also points out the absence of interval ratios and tetrachordal analysis of the modes in the sources from this period.

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12. Readers who wish to acquire more knowledge on the various aspects of the contemporary Persian art music can consult the short article by Zonis (1965) or, in more details, the books by Zonis (1973), Farhat (1990), Daring (2006), Daring, Mirabdolbaghi and Safvat (1991), and Nettl (1992).

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13. The interval H, referred to as *ṭanīnī-yi mustazād* (augmented tone) by Hedayat (1938a, 17) and *bīsh-ṭanīnī* by some current musicologists (Alizadeh et al. 1996, 21), appeared in many species recognized by Shirazi. The interval W (a whole tone plus an apotome), being close to the Western equal-temperament augmented tone (300 c), rarely appeared in his listed species (mainly in the *māyih* pentachord with the intervallic structure WJT), but it does appear in the contemporary Persian, Turkish and Arabic music.

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14. I have recently examined this issue of variability of intervals and fretting systems in Persian art music in detail elsewhere (Poorhaydari 2022 and 2023) and proposed two theoretical models for the fretting of the string instruments, one based on the modified Pythagorean intervals and the other on dieses or quartertones.

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15. As also recognized by Wright (1978, 49), the terms *bil`arba`* or *dhul`arba`* and *bilkhams* or *dhulkhams* used by the Systematists were meant to be species of fourth and fifth, respectively, regardless of the number of tones within the species. For simplicity, the terms tetrachords and pentachords are used in this article interchangeably with the species of fourth and fifth. Examining the (subjective) criteria for consonance and how Urmawi considers some of the listed pentachords conditionally (and not completely) consonant is beyond the scope of this article.

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16. The ♯ in the notations presented in this article refers to half flat. It should be noted that the exact interval from the referenced note (e.g. the interval between B♯ and B is not necessarily a quartertone. Based on the fretting system advocated by Urmawi ([1267] 1938, 115; 2006, 131), this interval is theoretically a comma (ca. 23.5 c), but in practice it can be between a comma and a limma (ca. 90.2 c.). In Persian art music, the sizes of the neutral/median intervals have remained a subjective and contested matter (Poorhaydari 2022), and, in practice, they can vary according to the musician and the mode of the music (Talai 1993, 19). Additionally, I have used the symbol # in this article to show half sharp in Persian music.

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17. The pentachord TJJT was referred to as *panjgāh`asl* (authentic or principal fifth position), made of *rāst* (TJJ) and a *tanīnī* (T), by the Systematists (Ladhiqi [1485] 1939, 401). The term *panjgāh zāyid* refers to the same pentachord with a broken last *tanīnī* (TJJJB), as it would have a *zāyid* (extra) tone.

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18. Jurjani ([1375] 1938, 298), Maraghi ([1418] 1966, 36), Jami (2000, 190), Ladhiqi ([1485] 1939, 365), and Banayi ([1484] 1989, 31).

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19. The difference between the two and their relationship are discussed in Section 6.

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20. These musicologists include Mehdi Qoli Hedayat (1864–1955), Ali Naqi Vaziri (1886–1981), Rouhollah Khaleghi (1906–1965), Mehdi Brakeshli (1912–1988), Mohammad Taghi Massoudieh (1927–1999), Hormoz Farhat (1928–2021), Farhad Fakhreddini (b. 1938), Majid Kiani (b. 1941), Jean During (b. 1947), Hossein Alizadeh (b. 1951), Dariush Talai (b. 1953), and Nariman Hodjati. For the corresponding sources, see Hedayat 1938b, vol. 3, 22, 100; Vaziri 1934, Part 2, 158–164; Khaleghi 1982, Part 2, 161–166; Barkeshli 1976, 133–134; Massoudieh 1997, 76, 104–106; Farhat 1990, 76–80; Fakhreddini 2013, 303–322; Kiani 1992, 41; During 2006, 300; Alizadeh et al. 1996 1996, 70–72; Talai 2017, 17, 32; and Hodjati 1998, 77–78.

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21. There is also confusion between the two terms *irāq* and *hijāz(i)* in the Systematist treatises. The tetrachord JTJ was referred to as *hijāzī* by Maraghi ([1418] 1966, 68), Ladhiqi ([1485] 1939, 365), and Banayi ([1484] 1989, 31), but labeled as *irāq* in Urmawi's *al-Sharafīyyah* (1938, 119; 2006, 135). Jurjani ([1375] 1938, 378) comments that the tetrachord JTJ may be called *irāq* or, more frequently, *hijāzī*, depending on what species comes after that. Urmawi did not recognize the tetrachord JHB that was referred to as *hijāz* by Shirazi (2008, 235). Shirazi called the tetrachord JTJ *rū-yi`irāq*. I use the terms *irāq* for JTJ and *hijāz* for JHB, which is consistent with the terminology used by Wright (1978, 50–51) and Rostami (Urmawi [1235] 2001, 21).

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22. In most *radīfs*, the term *rāk* (suspected to be a variation of the Indian term raga) refers to a number of *gūshihis* in the *dastgāh māhūr* (and repeated in the *dastgāh rāst-panjgāh*). Interestingly enough, the intervallic structure of these *gūshihis* in *māhūr* is based on the conjunct (or disjunct) tetrachords JHB and TBT, with a *shāhid* on the tone between the two (Fakhreddini 2013, 157–159; Farhat 1990, 98), i.e., a modulation to (the “new”) *isfahān*.

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23. The traditional fretting of *tār/sitār* with third-tone intervals between F and G, i.e., with one fret between the theoretical F[♯] and F[♮] (Farhat 1990, 17), may be related to the ambiguity of $\hat{7}$ in the scale of *isfahān* on G.

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24. *Namāyān* is the term Vaziri (1934) and Khaleghi (1982, vol. 1, 48) used for $\hat{5}$ instead of dominant.

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25. This interpretation is consistent with the notion of “suspended cadence” (*āsmā karār*) in Turkish art music (Aydemir 2010, 26), in which the piece ends on $\hat{2}$, $\hat{3}$, or $\hat{6}$ (depending on the *makām*), instead of $\hat{1}$ (*tām karār* or full cadence) or $\hat{5}$ (*yārīm karār* or half cadence).

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26. A popular and famous vocal *gūshih* in *humāyūn* is *sūfīnāmih* (Fakhreddini 2013, 291), which can also be performed at the end of the *dastgāh isfahān* as in Davami and Karimi’s *radīfs*, where it acts as a return to *humāyūn* (with a *khātimih* on $\hat{1}$ of *humāyūn*).

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27. A total tally resulting in one histogram or curve is suitable for simple and basic *gūshih*s and *tasnīfs*, which represent one “*maqām*”. In such cases, a very clear peak appears on one of the tones, i.e. the *shāhid*. In musical pieces with significant melodic progression or comprising two “*maqāms*”, a clear prominent tone may or may not appear. In such cases, sometimes the determination of the *shāhid*(s) can be achieved by establishing separate curves for different sections. In some *gūshih*s with modulations, it is typically the *shāhid* of the initial section (or even the initial phrase) that represents the intended mode of the *gūshih*.

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28. For the *isfahān gūshih*s in the above-mentioned *radīfs*, see Massoudieh 2003, 107–123; Tahmasbi 1995, 239–260; Ma’rufi 2011, 453–479; and Payvar 2011, 103–112.

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29. Davami’s collection represents the “classical *tasnīfs*” (Caton 1983, 20–23) of Persian art music that were produced by such prominent composer-lyricists as Ali-Akbar Shayda (1843–1906) and ‘Aref Qazvini (1882–1934). The label “nineteenth century *tasnīfs*” used in this article to refer to the Davami’s collection, which may include some early twentieth-century *tasnīfs*, is mainly for convenience and distinction from the more recent *tasnīfs* collected by Nasirifar.

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30. The term “tempered” here means lowering $\hat{6}$ a quartertone that results in a minor 6th (as in the harmonic minor scale) instead of a neutral 6th (that is a characteristic of the untempered *isfahān*). Tempering of Persian *maqāms* typically occurs when using Western musical instruments (such as a piano or a guitar).

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31. An arch-shaped progression is a generalized character of the *gūshih*s of a *dastgāh* in a *radīf* (Caton 2001, 2). Sometimes the arch is asymmetrically skewed so that the peak of the arch inclines toward the end (right side), as demonstrated by Zonis (1973, 45) using *gūshih* blocks.

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32. See, for instance, the analyses of *ruhāb* and *shāh-khatāyī* by Fakhreddini (2013, 313) that show some emphasis on $\hat{4}$ without an explicit determination of the *shāhid*. Similarly, see Farhat (1990, 79) on *gūshih shāh-khatāyī*. The only source I have encountered to point out $\hat{4}$ as a *shāhid* in some representative *gūshih*s (in some *radīfs*, not including Ma’rufi’s) is the article by As’adi (2008, 51) on the modal variations in *isfahān*.

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33. A version of the *tasnīf* sung by the vocal Maestro Mohammad-Reza Shajarian (1940–2020), along with the subsequent *ring*, can be accessed on YouTube (Persianmusicube 2012). I transcribed the

pieces from the recording and simplified the *tasnīf* for the analysis. The simplified notation is generally consistent with that of Payvar (2011, 172) based on Davami's version. For brevity's sake, the transcription of the *ring* is not presented here.

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34. The examined pieces were the melody lines of eleven vocalises (songs without words) in minor in the Royal Conservatory of Music (RCM) Resonance Series Levels 5 through 8 (2012). The examination revealed that the starting tone was $\hat{1}$ (45%), $\hat{3}$ (18%), or $\hat{5}$ (36%). The ending tone was $\hat{1}$ for all pieces. The overall prominent tone was either $\hat{1}$ (36%) or $\hat{5}$ (64%) based on duration and $\hat{1}$ (9%), $\hat{3}$ (27%), or $\hat{5}$ (64%) based on the frequency of appearance.

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35. Nahāvand is the name of an ancient city in western Iran. The Persian names of the modes that contain the letter *v* (e.g. *navā* and *nahāvand*) are replaced with the letter *w* in Arabic, since there is no *v* in the classic Arabic. Persian pronunciation is used in the transliteration of such words in this article.

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36. Two pentachords related to *hijāz* were *nayrīzī* or *nayrīz* (TJHB; Wright 1978, 60) and *'uzzāl* (JHBT; Wright 1978, 56). In contemporary Arabic music (Marcus 1989, 521), the equivalent *jins* to *nayrīzī* is *nakrīz* or *navā athar*.

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37. Marcus (1989, 294) also points out the relationship between the contemporary species *nahāvand* and "*būsalīk*" in Arabic music; the tetrachord TBT (Systematist *navā*) is "commonly called '*nahawand*' when it occurs on C or F but is often called '*busalik*' when it occurs on D or G." This is just another example of variation of nomenclature in the contemporary Arabic, Turkish, and Persian musical systems (and non-conformance to the Systematist terminology), which becomes confusing in a historical examination of the *maqāms*. The Systematist *būsalīk* was BTT.

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38. Signell (2008, 23) recognizes two sizes of *mujannab* in Turkish music: the small *mujannab* (which I show as J_1) of 5 commas or ca. 114 c and the large *mujannab* (J_2) of 8 commas or ca. 180 c. The "augmented second" (H) is 12 commas or ca. 270 c. Several accidentals determine the interval from the referenced tone in Turkish music (Signell 2008, 24; Aydemir 2010, 24). Among these are the Turkish symbols \flat (lowering the pitch 4 commas or 1 limma; different from the Persian and Arabic \flat), \flat (lowering 1 comma), \sharp (raising 1 comma; different from the Persian and Arabic \sharp) and \sharp (raising 4 commas).

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39. For more details on the analysis of Ladhīqī's *tarkīb humāyūn*, see Poorhaydari 2025.

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40. This scale, which could be established by adding an upper *isfahān* pentachord to a lower *navā* tetrachord, was referred to as *khazān* (meaning autumn) in some of the medieval treatises (Jurjani [1375] 1938, 397; Banayi [1484] 1989, 49). *Khazān* was not among Urmawi's twelve "famous cycles," and its identification among the consonant cycles (*adwār mulāyīm*) is credited to Ali Jurjani (Barkeshli 1976, 109).

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41. The terms *yigāh*, *dugāh*, *sigāh*, *chahārgāh*, *panjgāh*, *shishgāh*, *haftgāh* and *hashtgāh* (*javāb*, i.e., response) refer to the repositions (or scalar transpositions) of a mode. The first five terms (i.e., for $\hat{1}$ through $\hat{5}$) have been used in Persian music for centuries (Shirazi 2008, 141; Wright 1978, 172), if not millennia, primarily for the basic *maqām rāst* (as *yigāh*) as well as the corresponding main frets (*pardih*) on a string instrument. The concept and the terms can be extended to any basic *maqām*, as theoretically considered by Shirazi (2008, 141; Wright 1978, 174) and as I have done for *humāyūn* (Poorhaydari 2025) and *isfahān* (here).

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42. An exception is the brief discussion by Shirazi (2008, 141) on the repositions of *rāst*.

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43. The sources for this list are: Urmawi (1235) 2001, 29–35; Jurjani (1375) 1938, 337–343; Ladhiqi (1485) 1939, 376–382; Jami 2000, 193–207; and Banayi (1484) 1989, 48–54. Note there are some variations in terminology and the intervallic structures among these sources.

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