


Konservatoryum Conservatorium



Submitted 05.01.2025
Revision Requested 26.02.2025
Last Revision Received 26.03.2025
Accepted 07.04.2025
Published Online 09.04.2025

Research Article

 Open Access

Analysing Synthetic Scale Structures in Ulvi Cemal Erkin's *Piano Sonata*, 1st and 2nd *Symphonies*



Ümit Fışkın¹  

¹ Çorlu, Tekirdağ

Abstract

Ulvi Cemal Erkin was a composer who was influenced by the Impressionist movement. This effect is particularly evident in timbre, texture, and chord elements. He composed works that combined traditional Turkish *makam* music with Western musical elements. He combined folk dances, Anatolian melodies, and *usûls* and/or scale of the Turkish *makam* music, and utilized pentatonic scales, whole-tone scale, and synthetic scales while creating melodies. Besides, synthetic scale structures, which Erkin utilized, are not limited to the Turkish *makam* music. However, while analysing the scale structures employed by Erkin, researchers focused on their similarities with Turkish *makam* music. Therefore, the structures of synthetic scales that differ from the Turkish *makam* music scales utilized by Erkin will be analysed in this study. The scope of the study is limited to Erkin's *Piano Sonata*, 1st and 2nd *Symphonies*. Document analysis, literature review method and style analysis method will be employed in this study. As a result, Erkin utilized such synthetic scales as overtone, Neapolitan Major 6th, Asian Bartók, Hungarian Minor/Major. Beside, he employed 'rotation' structures of some Turkish *makam* music scale. In this way, he expanded range of scale he employed. A comparative analysis of his works with those of other composers would contribute to the field.

Keywords

Ulvi Cemal Erkin • mode • Turkish *makam* music • synthetic scale • style analysis



“ Citation: Fışkın, Ü. (2025). Analysing synthetic scale structures in Ulvi Cemal Erkin's *Piano Sonata*, 1st and 2nd *Symphonies*. *Konservatoryum–Conservatorium*, 12(1), 1-13. <https://doi.org/10.26650/CONS2025-1613880>

© This work is licensed under Creative Commons Attribution-NonCommercial 4.0 International License. 

© 2025. Fışkın, Ü.

✉ Corresponding author: Ümit Fışkın ufiskin7@gmail.com



Konservatoryum–Conservatorium

<https://cons.istanbul.edu.tr/>

e-ISSN: 2618-5695

Analysing Synthetic Scale Structures in Ulvi Cemal Erkin's *Piano Sonata*, 1st and 2nd Symphonies

Since the first quarter of the 20th century, Nationalism has had an impact on cultures, politics, arts and music in Europe. According to Burkholder et al. (2010) around East Europe and Russia, in countries under the influence of Nationalism, composers utilized elements of their own cultural traditions for their musical production. They synthesized “a personal style from the diverse mix of national and foreign influences and of old and new music that surrounded them” (Burkholder et al., 2010, p. 786).

According to Tymoczko (2011), Western music composers in the 20th century used three different methods in their works: the chord-based approach, the scale-based approach, and the hybrid approach that combines these two methods. In the scale-based approach, the sound line or connections are linked to scales rather than chords. This approach extends the traditional modulation methods of the 19th century chord-based approach to new sequential domains. In addition to the major and minor scales, synthetic scales (whole tone, hexatonic, octatonic, Hungarian minor/major, etc.) and church modes are used as musical material in the scale-based approach (Araz, 2008).

According to Çöloğlu, while composers influenced by Impressionism turned to Far Eastern scales, composers influenced by Nationalism drew on scales from their own cultural traditions. This approach is evident in Debussy and Ravel's use of the pentatonic scale, whole-tone scale and church modes instead of the major/minor scale. In contrast, Stravinsky and Bartók used synthetic scales and scales inherited from their local cultures (Çöloğlu, 2005, p. 33). For example, new scale patterns were created using rotations of synthetic scales such as overtone and undertone scales (Antokoletz, 1993, pp. 27, 28, 31).

According to Dallin, synthetic scale is a combination of notes not “available in major, minor, or any mode. Infinite variety is possible in constructing scale of this sort.” (Dallin, 1964, p. 39). According to Araz, “Without being bound to a certain tradition, completely original sound sequences are referred to as ‘synthetic sequences’ are defined.” (Araz, 2011, p. 83). Persichetti mentioned about synthetic scale as follows: “Free placement of scale steps results in original scale formations beyond the sphere of major and minor modes. Most original scales are constructed by placing any number of major, minor, and augmented seconds in any other...Some ‘original’ or synthetic scales are used more often than others. These better-known scales often coincide with folk scales...” (Persichetti, 1961, p. 43). Synthetic scale is limited with one octave pitch range, and consists of seven pitches with two tetrachords. With the addition of the octave of the axis, the scale is completed. These two tetrachords can be identical or different. In this way, an infinite number of scale patterns can be reached. Persichetti provided a list of the main synthetic scales used in folk music melodies in Europe (Figure 1) (Persichetti, 1961, p. 44).

Figure 1*Examples of Synthetic Scales (Quotation: Persichetti, 1961, p. 44)*

According to Antokoletz “in the early twentieth century, Eastern European composers, like Bartók and Stravinsky, turned towards their own national sources for the development of a new musical language, absorbing and utilizing basic elements from their folk-music idioms” (Antokoletz, 1993, p. 25). Other Eastern European composers, like Scriabin, utilized ‘abstract sources’ in the melodic and harmonic structures of local elements. The German-born Russian composer Georg von Albrecht composed works in both styles. Antokoletz gives the example of ‘abstract sources’ ‘overtone and undertone series’ in Albrecht’s compositions. Bartók Stravinsky, Scriabin and Albrecht derived new non-diatonic modes from folk modes according to Antokoletz. They did this through mode rotation and extension (Antokoletz, 1993, p. 25). For example, Bartók utilized the 3rd rotation (E-F#-G-A-Bb-C-D-E) of the mode (C-D-E-F#-G-A-Bb-C) (Table 1) at the beginning of *Cantata Profana* (1930), transposing it to D (D-E-F-G-Ab-Bb-C-D). At the end of the piece, Bartók utilized the 5th rotation of the mode. This mode is transposed to D (D-E-F#-G#-A-B-C-D) (Antokoletz, 1993, p. 27). Bartók took a similar approach in his *Op. 20, No. 3 Eight Improvisations on Hungarian Peasant Tunes* (1920) for piano. Bartók utilized non-diatonic folk mode (D-E-F#-G-A-Bb-C-D) between bars 3 and 15 in this work (Antokoletz, 1993, p. 38, see Ex. 6).

Table 1*List of overtone scale systematic rotation and its undertone scale formula*

Rotation Level	Pitches								Mode Formula	Undertone Scale Formula of Rotation Level
Rotation 1	C	D	E	F#	G	A	Bb	C	(2221212)	(2121222)
Rotation 2	D	E	F#	G	A	Bb	C	D	(2212122)	(2212122)
Rotation 3	E	F#	G	A	Bb	C	D	E	(2121222)	(2221212)

Rotation Level	Pitches								Mode Formula	Undertone Scale Formula of Rotation Level
Rotation 4	F#	G	A	Bb	C	D	E	F#	(1212222)	(2222121)
Rotation 5	G	A	Bb	C	D	E	F#	G	(2122221)	(1222212)
Rotation 6	A	Bb	C	D	E	F#	G	A	(1222212)	(2122221)
Rotation 7	Bb	C	D	E	F#	G	A	Bb	(2222121)	(1212222)

Albrecht utilized overtones and undertones modes in *Op. 42* (1934) *12 Preludes* and *Op. 61* (1959), *12 Preludes*. For example, he utilized (C-D-E-F#-G-A-Bb-C) non-diatonic mode in *Prelude No. 1, Op. 42* for piano. In the same work, the undertone of the overtone E-mode is described between bars 1 and 8 of *Prelude No. 9* (Antokoletz, 1993, see Ex. 3, p. 32-33).

In Turkey, the Modernism movement and Turkish *makam* music had a significant impact on the first generation of composers as they created their works. Some research indicate that Turkish composers reinterpreted tonality in their early works as a result of their exposure to Impressionism and neo-classicism (Çöloğlu, 2005, p. 16). The Turkish Five and the other first generation composers integrated materials of the Turkish *makam* music with Western music harmony techniques in Turkey. This approach was employed with the scale-based techniques until 1950s. The Turkish Five avoided tonality and utilized a scale-based approach that maintained centrality in their works. Additionally, they employed any melody that had a chord or pitch center (Çöloğlu, 2005, p. 33).

Erkin was influenced by the Impressionist movement. This effect is particularly evident in timbre, texture, and chord elements. He combined folk dances, Anatolian melodies, and *usûls* and/or scale of Turkish *makam* music. He utilized pentatonic scales, whole-tone scale, and non-diatonic modes while creating melodies (Çınar, 2015, p. 30). He utilized them with an individual understanding of modality.

Research on Erkin's works particularly focus on form structures or *makam* analysis. Altınsoy (2017) analysed the composer's single *Violin Concerto* in terms of playing technique, form, harmony, and orchestration. In this study, the harmonic structures were analysed not only in one direction, but also in relation to both Western music and Turkish *makam* music. As a result, it is generally seen that the composer's contributions to Turkish music are prominent in this work, and some characteristics of European music are integrated and harmonically combined with quartal harmony. It was noted that Turkish motives are heard intensely, and Erkin created melodies that are both understandable and memorable. He utilized themes that are clear and memorable.

Çınar (2015) analysed the composer's last work, *The Symphonic Movement*, in detail focusing on harmony, form, style, orchestration, melodic-rhythmic structure, and *makam-usûl* elements of traditional Turkish *makam* music. In this context, the study also discusses how the composer utilised the form and harmonic techniques of Western music as well as traditional Turkish *makam* music in the formation of his compositional approach. The study also examines the reflections of the Nationalist and Impressionist movements in his works, and the modernist traces, especially in his last works. As a result, *The Symphonic Movement*, unlike his previous works, Erkin went beyond the classical tradition and developed an individual style in both melodic and harmonic aspects. The musical elements in this work also reflect the mysterious aspects of his inner world, allowing him to express a different attitude.

Güldoğan (1999) analysed the *makam*, *usûl*, and form elements of traditional Turkish music in Erkin's piano works, and how these elements were applied to new compositions. As a result of the study, Erkin used scales that are closer to the tempered system, rather than microtonal intervals. He used traditional Turkish music *makams*, although this usage differs from the traditional approach. This difference "arises



from transposing a theme written in a particular *makam* in the piece, without changing the *makam*, and presenting it in another tonic." (Güldoğan, 1999, p. 29)

Sayın (2018) has mentioned the life of Ulvi Cemal Erkin, the movements he was influenced by in his works, his musical language and his place in the Turkish Five. In addition, his *Six Preludes for Piano* (1967) is analysed in terms of harmony, form, texture, and the use of rhythmic material together with score examples. The study also provides various suggestions for pianists who will study this work in order to overcome technical difficulties. In conclusion, it is seen that Erkin differed from the local texture he used in his early works and did not adhere to a strict tonal system. It can be said that the composer makes excellent use of the sound register and colour range of the piano in this work, which contains the combined metric structure (*usûl*) peculiar to Turkish music. The study concludes that the *Six Preludes for Piano* contains the modernist practices of the 20th century.

Belce (2018) examined Erkin's 'Köçekçe' Dance Rhapsody (1943) in terms of the musical analysis and conducting techniques. In the evaluation of the musical structure, the form structure and orchestration of the work were analysed in detail. Kalın (2019) examined Erkin's *Piano Sonata* in terms of form, playing techniques, and *makam* analyses. Kalın exhibited the scale elements of Turkish *makam* music in *Piano Sonata*.

All of this research examined different aspects of Ulvi Cemal Erkin's works such as form, playing techniques, and Turkish *makam* music scales and *usûls*. They don't discuss about the structures of synthetic scale, although Erkin utilized them.

Aim, Problem, and Scope of Research

While Erkin was creating themes and motives, he preferred to use the scale-based approach until the 1960s. He employed synthetic scales and Church modes in this approach. However, the research focused on the similarity of scale structures with Turkish *makam* music. In this context, the synthetic scale structure will be analyzed in Erkin's music. Therefore, the main problem is which scale structure was employed by Erkin. The scope of the study is limited to Erkin's *Piano Sonata*, 1st and 2nd *Symphonies*.

Importance of the Research

According to Persichetti (1961), scales originating from folk music are classified as synthetic scales in Western music. In this context, Erkin frequently utilized Turkish *makam* music scale structures while creating synthetic scales. However, Erkin's synthetic scale structures are not limited to *makam* music. While creating these structures, Erkin utilized scales similar to the overtone, whole-tone, and other scales used by composers such as Bartók and Stravinsky. However, there is no definition in the literature about these scale structures that Erkin created.

Method

In this study, document analysis, literature review and musical analysis methods will be employed. Firstly, the motive and theme elements were identified in the musical passage. The pitch center was defined according to pedal tone and musical orientation in these motives or themes. After the pitch center was defined, a pitch-set was formed from the pitches in the theme and accompaniment. A scale was created from the pitch set. For example, in *Symphony No. 1, Movement III*, the theme consists of the pitches (D-E-F-G-G#-B-C) in piccolo flute part between bars 63 and 70 (Figure 2). These pitches are oriented towards pitch E in bar 67. However, the pitches Bb and Db are added to this scale as part of chord in flute part. With these additions, the scale becomes (E-F-G-G#-Bb-B-C-Db-D-E). In this pitch-set, the pitch B functions as a

neighbour note, and C as a passing note to the next phrase. Therefore, the scale is formed as (E-F-G-G#-Bb-Db-D-E) on E center.

Figure 2

Symphony No. 1, Movement III, bars 63-70.



In another example, in *Piano Sonata, Movement II*, G# functions as a pedal tone, and the other pitches are oriented towards this G# in bar 44 (Figure 3). Thus, G# serves as a center pitch. The upper part contains the pitch set (B-F#-C-A-G#-Fx) between bars 32 and 35, and the accompaniment contains the pitches (G#-D#-A). In this context, the pitch set is formed as (G#-A-B-C-D#-F#-Fx-G#). When the pitches (G#-D#-A) continue in the accompaniment, the pitch D is added in the upper part in bars 36 and 37. In my opinion, the pitch D functions as a neighbour note here. A descending line, (Fx-E-D#-C#-B#-B-A-G#), ends on G# between bars 40 and 42. It can be observed that the pitch C# is not emphasised very much from bar 32 onward. Thus, the pitch C# is passing note here. The pitch F# in bars 33, 36, and 39 within the chord (B-F#-B), transition to Fx in bars 35, 39, and 43 as the leading note. Under these conditions, the non-diatonic mode (G#-A-B-B#-D#-E-Fx-G#) is formed between bars 32 and 44.

Figure 3

Piano Sonata, Movement II, bars 32-44 (Reprinted from manuscript).



In these two examples, Erkin utilized enharmonic intervals such as Db instead of C# in the first example, and B# instead of C in the second. Additionally, some non-diatonic modes are transposed to different tonic center. In this case, it can become difficult to define the interval structure of the mode. Thus, for the convenience of the reader, we will use 'scale formulation' which was employed by Berki and Karadeniz (Karadeniz, 2020). Scale formulation is defined by considering 'the distance between successive voices in any set of pitches as half a tone [minor 2nd interval], which is represented by digit '1' (Karadeniz, 2020, p. 5). If the distance between two pitches is one and half tones, it is labelled digit '3'. For example, as seen in the first example, the interval values of the pitch set (E-F-G-G#-Bb-Db-D-E) is 1-2-1-2-3-1-2. Therefore, the scale formula is defined as $e_{1213212}$. In this formula, the 'e' symbol represents the center, while the numbers symbolise the sum of the minor 2nd intervals between two successive pitches (Karadeniz, 2020, p. 63). In the other example, the interval structure or interval values of the pitch set (G#-A-B-B#-D#-E-Fx-G#) is 1-2-1-3-1-3-1. Therefore, the scale formula is labelled as $g\#_{1213131}$.

The scores of *Piano Sonata*, 1st and 2nd *Symphonies*, used in this study, were published by Schott Music Gmb H&Co between 2013 and 2015.¹ Research and publication ethics have been complied with in the study. The study is a research article.

Findings

Until the 1960s, Erkin combined folk music melodies collected in Anatolia with themes and motives derived from Turkish *makam* music modes and scale structures. In this approach, the scale structures in the themes he created are not solely derived from church modes and/or scales of *makam* music. It is evident that Erkin employed synthetic scales beyond the confines of *makam* music, incorporating tetrachords and pentachords. In this section, the synthetic scale structures evident will be mentioned in Erkin's *Piano Sonata*, 1st and 2nd *Symphonies*. However, it should be noted that in this analysis, modes that overlap with Turkish *makam* music scale structures will be excluded.

Symphony No. 1

Erkin's Symphony No. 1 has four movements: Allegro aperto, Adagio, Allegro scherzando, Moderato-Allegro non troppo-allegro. The first movement opens with $\text{d}_4(1312122)$ non-diatonic mode. This mode derives from Makam Hicaz Hümayûn. After transition section (bars 10-19), There is second theme on the D# tonic between bars 17 and 22. This theme repeats between bars 206 and 211. The flute part contains the pitch set F#-G#-A#-B-C#-D in bars 206 and 207, and F-F#-G-A#-C#-D-D#-E in bars 210 and 211. Especially in bars 206 and 207, the pitches are oriented towards pitch G#. In my opinion, the pitches D#, F and G are as passing note to the next phrase. In this case, the pitches G#-A#-B-C#-D-E-F# form a $\text{g}_{\#}(2121222)$ synthetic scale on the G# tonic between bars 206 and 211 (Figure 4a). This is into rotation 3 of basic overtone scale (Table 1). There are three different synthetic scales in the third movement. Firstly, in the flute parts one and two, there is into rotation 4 of Hungarian Major, $\text{e}_4(1212312)$, between bars 63 and 70 (Figure 1 and Figure 2). The same scale is in the first movement (bars 191-196) of Piano Sonata. Secondly, in this movement, the pitches B-C#-D#-E-F# are centered around the pitch D# between bars 113 and 124 in the string instruments' parts (Figure 4b). The central attraction of the pitch D# is more pronounced between 121 and 123. The pitch set D#-E-F#-G#-A-C# appears between bars 113 and 114. In the next two bars, the pitches F# and G# are transition to F and G in the pitch set D#-F-G-B-C#. This sequence concludes at bar 124, where the scale becomes clearer with the pitch set D#-E-F#-G-C#. It is taken into account the pitches A in bar 114, and B in bar 116, the scale D#-E-F#-G-A-B-C#-D# forms as a Super Locrian mode (1212222) on the D# tonic (Figure 1 and Figure 4b). Finally, between bars 170 and 173, a passage begins on the pitch A, ascends on pitch C, and ends on pitch D with descending line (Figure 4c). In this passage, the pitch set consists of pitches D-E-F-G#-A-B-C with pitch B in flute part, bar 173. This set is an Asian Bartók scale (2131212) on the D tonic.

¹<https://www.schott-music.com/en/symphony-no-1-no315082.html>

Figure 4

Passages in *Symphony No. 1* in which the synthetic scale is defined.

a) *Symphony No. 1, Movement I, bars 204-211*



b) *Symphony No. 1, Movement III, bars 113-124*



c) *Symphony No. 1, Movement III, bars 170-177*



Piano Sonata

Erkin's *Piano Sonata* has three movements: Allegro, Adagio molto sostenuto, Allegro. Two synthetic scales are defined in the first movement, one synthetic scale in the second and third movement. In the first movement, a motive begins in bar 124 on the upper staff with pitch E. We see an inversion of this motive on pitch G in the next bar, and a pitch set containing the pitches D-Ab-Bb-Cb-Eb-F-G on the lower staff. In this case, a ${}_G(1213122)$ non-diatonic mode is observed on the G tonic in bars 125 and 127 (Figure 5). This mode is transposed to E tonic between bars 129 and 131. This mode is into rotation 6 of basic scale derived from Makam Hicaz. The other synthetic scale is defined in this movement between bars 191 and 196. In bar 191, a motive begins on the pitch E, and the central effect of this pitch continues until bar 197. The pitch set E-F-G-Ab-C#-D appears in bar 191. The pitch Bb is included this set in bar 193 (Figure 6). In this context, a ${}_E(1212312)$ non-diatonic mode forms on the E tonic between bars 191 and 196 in this movement. This is into rotation 4 of the Hungarian Major synthetic scale.

A ${}_{G\#}(1213131)$ non-diatonic mode on the G# tonic is observed between bars 32 and 40 in the second movement (Figure 3). In my opinion, this scale is derived from Makam Hüzam. This makam is a combined makam. Therefore, it has many more than seven pitches in Turkish makam music. However, Erkin constructed a set from first seven pitches of Makam Hüzam's scale.

A theme begins with 16th notes on upbeat in the third movement, bar 90. In this theme, the pedal effect of pitch E appears between bars 91 and 97. This passage involves the pitch set E-F#-G-A-Bb-B. However, the pitch Bb is more prominent than the pitch A. In bar 104, the pitches C# and D are added to this set. At this point, an Asian Bartók synthetic scale is formed with the pitch set E-F#-G-A#-B-C#-D on the E tonic. This progression continues until bar 119. (Figure 7).

Figure 5

Piano Sonata, Movement I, bars 120-138.



© Copyright 2015 SCHOTT MUSIC GmbH & Co. KG, Mainz

Figure 6

Piano Sonata, Movement I, bars 187-197.



© Copyright 2015 SCHOTT MUSIC GmbH & Co. KG, Mainz

Figure 7*Piano Sonata, Movement III, bars 95-106 (Reprinted from manuscript)*

Symphony No. 2

Erkin's *Symphony No.2* has three movements: Allegro, Adagio, Allegro alla *köçekçe*. Six synthetic scales are defined in the first movement. In this movement, a theme begins with the pitch D in violin parts. After descending line from pitch D to G in bar 3, a scale, which involves the pitches A-Bb-C#-D-Eb-F#-G, appears in bar 4. This scale arrives at the pitch Eb. We can consider this pitch as the tonic. At this point, a non-diatonic mode $_{eb}(3121311)$ is formed between bars 1 and 5 (Figure 8a). The second synthetic scale appears between bars 241 and 250 in the violin parts of this movement. Beginning with the pitch C#, theme reaches the pitch A# in bar 248. In this passage, a descending line contains the pitches A#-B-C#-D-E#F#-G from bar 242 to 248 (Figure 8b). The formula of this scale is $_{a\#}(1213113)$. The third one is defined between bars 301 and 305 in piccolo and flute parts. From bar 301, a descending note line contains the pitches E-Db-C-Bb-A-Gb-F, starting from pitch E and arriving at the same pitch in bar 305. These pitches form a non-diatonic mode $_{db}(3113121)$ (Figure 8c). These three non-diatonic modes are rotations of Hungarian Minor (Table 2).

Table 2*Rotations of Hungarian Minor Scale*

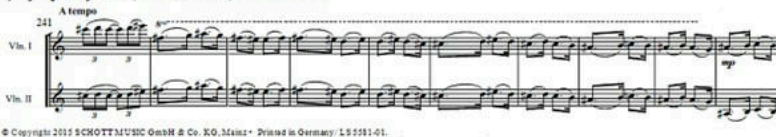
Hungarian Minor	Rotation 2 (Oriental Scale)	Rotation 3	Rotation 4	Rotation 5	Rotation 6	Rotation 7
(2131131)	(1311312)	(3113121)	(1131213)	(1312131)	(3121311)	(1213113)

Figure 8*Passages in Symphony No. 2, Movement I, in which the synthetic scale is defined (Part I).*

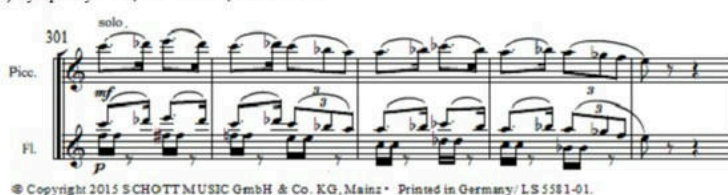
a) Symphony No 2, Movement I, bars 1-5



b) Symphony No 2, Movement I, bars 241-250



c) Symphony No 2, Movement I, bars 301-305



In this movement, the D-A chord functions as a pedal in the bassoon part, bar 121. In the clarinet basso part, from bar 123 to bar 126, an ascending line appears with the pitch set F#-G-A-B#-C. This set forms a $\text{d}_4(1321131)$ non-diatonic mode, accompanied by the pitches Eb and Bb in the bassoon part. This is into rotation 2 of an *Ayrık Alaca Dor* (1132113) scale which is identified by Saygun in his work 'Töresel Musiki' (Saygun, 1967, p. 17) (Figure 9 and Figure 10).

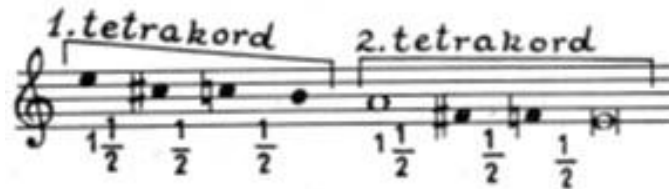
Figure 9

Symphony No. 2, Movement I, bars 121-126.



Figure 10

Ayrık Alaca Dor Scale identified by Saygun (Quotation: (Saygun, 1967, p. 17).



Another synthetic scale is defined between bars 161 and 171 in this movement. In bar 161, a theme begins with the B-Eb-G-B chord in the violin parts I-II, and viola part. The pitches gravitate towards pitch B (Figure 11a). Bars 161 and 162 repeat until bar 172. These two bars contain the pitches B-C-D-Eb-F#-G-A#. At this point a $\text{b}_5(1213131)$ non-diatonic mode is abstracted from *Makam Hüzam* between bars 161 and 171. There is a $\text{c}_6(2221311)$ non-diatonic mode into rotation 2 of Neapolitan Minor 6th (1222131) in the flute part, bar 172 (Figure 11b). In the viola part, between bars 305 and 309, the pitch set E-F-Gb forms an ascending-descending melody line. In the violoncello part, this motion is inverted, and has the pitches Ab-B-C-Db. At this point, the pitches form the pitch set Db-E-F-Gb-B-C in bar 305. With pitch Ab in violoncello part, bar 306, a $\text{ab}_6(3112311)$ non-diatonic mode is formed (Figure 11c). This mode is the undertone scale of the *Ayrık Alaca Dor* scale (1132113).

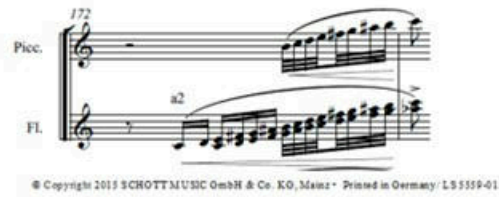
Figure 11

Passages in *Symphony No. 2, Movement I*, in which the synthetic scale is defined (Part II).

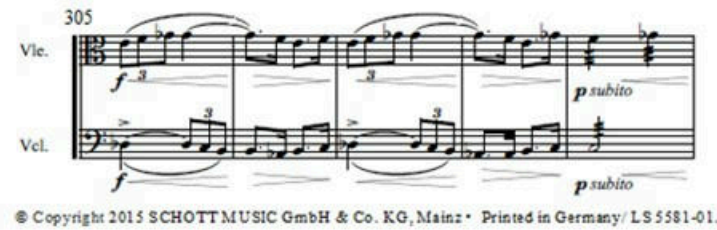
a) *Symphony No. 2, Movement I*, bars 161-165.



b) *Symphony No. 2, Movement I*, bar 172.



c) *Symphony No. 2, Movement I*, bars 305-308.



Conclusion

This study examines the synthetic structures in Erkin's *Piano Sonata*, 1st and 2nd *Symphonies*. Erkin emphasized the development of themes and motives and the scale-based approach in the works he composed until the 1960s. It is known that he used folk music melodies, Turkish *makam* music *usûl* and scale structures in these works. While constructing themes and motives, Erkin created synthetic scales in addition to church modes and Turkish *makam* music scales. However, there is not enough data about these scale structures in the literature. According to the results of this study, Erkin utilized three methods when creating synthetic scales. First, he employed Super Locrian, overtone scale, Asian Bartók, Hungarian Minor/Major, etc., which Persichetti described in the works of 20th century Western music composers. Secondly, he employed in rotation scale structures of Turkish *makam* music and Saygun's *Alaca Dor* scale. Finally, he created a scale like (1132113) combining with tetrachords (C#-D-Eb-F#) and (G#-A-Bb-C#). In summary, Erkin's understanding of modality is based not only on church modes and Turkish *makam* music scales but also the rotation and/or undertone structures of modes used in the 20th century. This indicates that Erkin had 'individual' understanding of modality. Moreover, the similarities between the techniques utilized by Erkin in the derivation of scales and those utilized by Bartók indicate that Erkin was somehow aware of these methods. Although we cannot base it on a source, we can say that Erkin acquired this knowledge through his education in France or by following the works of contemporary composers. A comparative analysis of the composer's other works in both small and large forms, and a style analysis within the context of the composer's derivation of scale would contribute to the field. In this context, it is foreseen that data will



be obtained in terms of comparing the works of Erkin and other composers of his period, as well as the aesthetic principles that informed them.



Peer Review	Externally peer-reviewed.
Conflict of Interest	The author have no conflict of interest to declare.
Grant Support	The author declared that this study has received no financial support.

Author Details Ümit Fışkın (Ph.D.)

¹ Çorlu, Tekirdağ

 0000-0002-7378-7372  ufiskin7@gmail.com

References

- Altınsoy, A. (2017). *Ulvi Cemal Erkin Keman Konçertosu'nun müzikal analizi. (Musical analysis of Ulvi Cemal Erkin's Violin Concerto)*. Master Thesis. Dokuz Eylül University, İzmir.
- Antokoletz, E. (1993). Transformations of a special non-diatonic mode in twentieth-century music: Bartók, Stravinsky, Scriabin and Albrecht. *Music Analysis*, 12(1), 25–45. <https://doi.org/10.2307/854074>
- Araz, D. G. (2011). *Neo-modal akımda armoni anlayışı (Harmony understanding in neo-modal stream)*. Proficiency in Art, Istanbul University, Istanbul.
- Belce, M. S. (2018). *Ulvi Cemal Erkin'in "Köçekçe" isimli orkestra için dans rapsodisi'nin müzikal analizi ve orkestra şefliği teknikleri açısından incelenmesi. (The musical analysis and the examination on the maestro techniques of Köçekçe dance rhapsody composed by Ulvi Cemal Erkin for the orchestra)*, Master of Arts Study Report, Hacettepe University, Ankara.
- Burkholder, J. P., Grout, D. J., & Palisca, C. V. (2010). *A History of Western Music*. W.W.Norton & Company.
- Çınar, O. (2015). *Ulvi Cemal Erkin'in müzik dili, geleneksel Türk müziği ile ilişkisi ve Orkestra için "Senfonik Bölüm" eserinin analizi (Musical language of Ulvi Cemal Erkin, his relation with traditional Turkish music and analysis of Symphonic Movement For Orchestra)* Proficiency in Art. Istanbul University, Istanbul.
- Çöloğlu, E. (2005). *Çağdaş Türk bestecilerinin 20. yy. müziğinin modernist anlayışlarıyla etkileşimi (The interaction of contemporary Turkish composers with the modernist perceptions of the 20th century music)*. Master Thesis. Mimar Sinan Fine Arts University, İstanbul.
- Dallin, L. (1964). *Techniques of twentieth century composition* (2nd ed.). W.M.C. Brown Company.
- Güldoğan, A. (1999). *Ulvi Cemal Erkin'in piyano eserleri aracılığıyla, geleneksel müziklerimizden, çağdaş Türk müzik sanatına taşıdığı müzikal unsurların incelenmesi. (Analysing the musical elements carried from our traditional music to contemporary Turkish music art by Ulvi Cemal Erkin through his piano works)*. Master Thesis. Uludağ University, Bursa.
- Kalın, I. (2019). *Ulvi Cemal Erkin Piyano Sonatının biçimsel yapısı ve çalış teknikleri açısından incelenmesi. (Analysing Ulvi Cemal Erkin's Piano Sonata in terms of formal structure and playing techniques)*. Master Thesis. Dokuz Eylül University, İzmir.
- Karadeniz, İ. (2020). *Saygun müziğinde makam soyutlamaları: Piyano konçertosu Op. 34, I (Makam abstractions on Saygun's music: Piano Concerto, op. 34, I)*. Doctoral dissertation. Hacettepe University, Ankara.
- Persichetti, V. (1961). *Twentieth century harmony: creative aspect and practice*. W. W. Norton & Company.
- Saygun, A. A. (1967). *Töresel musiki. (Traditional music)*. Milli Eğitim Press.
- Sayın, S. (2018). *Ulvi Cemal Erkin'in Piyano için "Altı Prelüd" adlı eserinin teknik ve müzikal açıdan incelenmesi. (Analysing Ulvi Cemal Erkin's Six Preludes for Piano in terms of technique and music)* Proficiency in Art. Mimar Sinan Fine Arts University, İstanbul.
- Tymoczko, D. (2011). *A geometry of music: harmony and conterpoint in the extended common practice*. Oxford University Press.

