Approaches to The Potential of Orchestration and Arranging Techniques in Music Education: What Can Be Done with A School Song?

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ABSTRACT

This qualitative study systematically examines the transfer of chord progression patterns used in different music genres to string instruments. The study emphasizes the art of orchestration, arranging approaches, the visual representation of chord progressions on the piano staff, and the fundamental principles of counterpoint. The chord progression patterns are supported by sample compositions, while orchestration and arranging approaches are presented in a structured manner. Transferring chord degrees and root positions quintintervals to piano and string instruments has been demonstrated. Along with all the presented topics, an arrangement study has been conducted on a school song. It is believed that all the organized musical ideas emerging on the subject can enhance the field of music education. In the example orchestration works, the use of root voice positions quintintervals, generally notating them on the violoncello two octaves below the first violin, lowering the triadic voices of the chords by one octave, and the preferences in distributing the chord voices have resulted in clear and rich tones. As a result of this study, it is recommended to uncover the effects of orchestration and arranging approaches on students.

Keywords: Arranging, chord progressions, counterpoint, music education, orchestration

1. INTRODUCTION

Designing new teaching and learning approaches to enhance the arranging skills of preservice music teachers and contemporary musicians is important and debatable (Mitchell, 2017). When discussing new instructional approaches, attention has been drawn to the concepts of orchestration and arranging presented in previous research. Orchestration, which supports musical forms, involves techniques that express and enhance musical ideas and a composition's overall character (Sevsay, 2013). Education in orchestration begins with students learning about the instruments (Sevsay, 2015). Organology involves achieving balance among the emerging harmonic colors (Aydınoğlu, 2013). Consequently, to succeed in orchestration, one must also have a good understanding of compositional techniques (Cacavas, 1975). This is because the various melodies, figures, entrances, and modulations in any orchestration example do not occur by chance; they must be skillfully composed (Sevsay, 2013).

The literature demonstrates that the concepts of orchestration and arranging have subtle differences. According to Cacavas (1975), the fundamental difference between arranging and orchestration is as follows: Orchestration is transferring music from one form to another while arranging involves starting the process from scratch. If you take the melody of "Yankee Doodle" and create an arrangement for a symphony orchestra, you arrange it. However, if you take Beethoven's string quartet and rework it for two flutes, a clarinet, and a bassoon, then you orchestrate it. Similarly, Keefe and Ingles (1990) provide a similar explanation, defining orchestration as the art of blending the tonal qualities of instruments and creating contrast, while they define arranging as both a harmonic and accompaniment process applied to an existing melody.

Some musicians use the terms orchestration and instrumentation interchangeably. However, the common understanding is that instrumentation specifically refers to the handling of instruments, while orchestration is concerned with combining the sections of an orchestra. Another viewpoint suggests that instrumentation is a science while orchestration is an art (Brinkman, 2009). Kennedy (2004) defines orchestration as the orchestral arrangement of a composition originally written for any instrument, opera, or similar context. The same author defines arrangement as the adaptation of a musical piece from its original composition to another musical structure. Arranging aims to add musical variety to an existing melody. Masterful arranging requires a vivid imagination that skillfully combines harmony, counterpoint, and musical form elements (Corozine, 2015). In this process, you take a piece of music and alter it somehow (Brinkman, 2009). It should be noted that arranging and orchestration skills are highly professional for contemporary musicians, classical musicians, and music educators (Mitchell, 2017).

A comprehensive study aiming to develop arranging skills for music educators is an important task for the future (Urniežius, 2020). Several common reasons in the basic music education require arranging a musical piece. One of the primary reasons is simplifying a piece. For instance, at the secondary school level, the original structure of Beethoven's 5th Symphony needs to be modified so that children can play without difficulty (Brinkman, 2009). In relation to this, Lindroth (2012) investigated the significance of arranging for music teachers in music ensembles. The research revealed that participating music teachers experienced a sense of accomplishment and passionately taught their arrangements to their students.

Indeed, arranging is closely related to popular music and similar genres, which is familiar to music teachers. However, the uniqueness of their work defines the distinction in arranging activities for music educators (Urniežius, 2020). The musical process steps presented in the current study primarily encompass the concept of orchestration.

1.1. Chord Progressions Used in Different Music Genres

Chord progressions serve as the building blocks of tonal music and understanding them is an important step in modeling orchestration techniques (Paiement et al., 2005). Incorporating different chord progressions is envisioned when orchestrating or arranging to breathe new life into the main melody, provide movement, and enrich harmony (Corozine, 2015). This is because chord progressions, one of the fundamental elements of music, have a high potential to influence the emotional impact of an orchestral composition (Cho et al., 2016). Therefore, examining the chord progressions and canons used in various music genres is crucial in orchestration and arranging approaches. The study includes examples of popular and contemporary chord progressions to illustrate this point.

1.1.2. Pachelbel's Canon

Johann Pachelbel, regarded as one of the important and influential composers of the Baroque music period, made significant contributions to the development of choral, prelude, and fugue musical forms. He composed the famous music piece known as "Canon in D" or Pachelbel's Canon (Salsabila, 2022). Cash et al. (1997) describe "Canon in D" as a highly structured composition of the Baroque era. Despite its small scale, "Canon in D" is an incredibly popular piece (Anderson, 2008). The Paillard Chamber Orchestra, founded by French conductor and musicologist Jean Francais Paillard in 1953, gained international popularity by performing Pachelbel's composition, bringing recognition to this previously lesser-known work (Orchestra, 1988). The musical notation of this piece is shown in Figure 1 below.

Figure 1:A sample piece for Pachelbel's Canon chord progression: *"Canon in D"*

The chord progression used in the composition "Canon in D" is a popular and widespread progression found in various music genres. For example, the Turkish rock band Bulutsuzluk Özlemi has used this chord progression in their song "Sözlerimi Geri Alamam." This chord sequence is also known as Pachelbel's canon. The scale degree and chord symbols of Pachelbel's canon chord progression are shown in Figure 2 below.

Figure 2:Chord progression of the Pachelbel's canon

No	Chord	Scale degree	Roman numeral
1	D major	tonic	I
2	A major	dominant	V

3	B minor	submediant	vi
4	F# minor	mediant	iii
5	G major	subdominant	IV
6	D major	tonic	I
7	G major	subdominant	IV
8	A major	dominant	V

1.1.3. Passamezzo antico

Passamezzo antico is a chord progression that was popular in Italy during the Renaissance period and rapidly spread throughout Europe in the 16th century (Middleton, 1990). Some forms in the Renaissance period were derived from the passamezzo antico chord progression (Gombosi, 1936). Passamezzo antico is a chord progression used for dances, strophic songs, and instrumental variations in the 16th and 17th centuries (Walker, 1979). Romanesca is a variation of passamezzo antico. The traditional and famous English folk song "Greensleeves" is an important example of the Romanesca chord progression. The scale degree and chord symbols of the passamezzo antico chord progression are shown in Figure 3 below.

Figure 3:Chord progression of the Passamezzo antico

No	Chord	Scale degree	Roman numeral
1	A minor	tonic	i
2	G major	subtonic	VII
3	A minor	tonic	i
4	E major	dominant	V
5	C major	mediant	III
6	G major	subtonic	VII
7	A minör - E major	tonic - dominant	i - V
8	A minor	tonic	i

The scale degree and chord symbols of the Romanesca chord progression are shown below in Figure 4.

Figure 4:Chord progression of the Romanesca

No	Scale degree	Roman numeral
1	tonic	iii
2	subtonic	VII
3	tonic	i
4	dominant	V
5	mediant	III
6	subtonic	VII
7	tonic - dominant	i - V
8	tonic	i

When Figure 3 and Figure 4 are correlated, it can be observed that the chord progression of Pasamezzo antico is the same as Romanesca, except for the first degree where III is replaced with i.

1.1.4. Commonly Used Chord Progressions in Pop Music

One of the commonly used chord progressions in pop music composition is the vi - IV - I - V cadence. Hirsh (2008) referred to this chord sequence, commonly found in pop music, as the "Sensitive Female Chord Progression." An example of this chord progression can be found in the song "Numb" by the American rock band Linkin Park. Another example is the song "Complicated" by Canadian singer Avril Lavigne (Figure 6). The scale degree and chord symbols for this chord progression are shown in Figure 5 below.

Figure 5:Sensitive female chord progression

No	Chord	Scale degree	Roman numeral
1	A minor	submediant	vi
2	F major	subdominant	IV
3	C major	tonic	I
4	G major	dominant	V

Figure 6:A sample work for vi- IV – I – V chord progression: "Complicated"

1.2. The Transcription of Piano Music for Strings

The adaptation of piano music for strings is both an important and frequently used orchestration technique. It is crucial to apply this technique without compromising the composer's intentions (Çokamay, 2017). Levinson (2005) discussed how to transcribe Mario Castelnuovo-Tedesco's piano music into orchestral arrangements. In a similar study, Mitchell (2017) demonstrated the results of orchestrating a film score based on a four-part fugue composition using a piano score as a guide. This information stated by Efe (2019) is shown below in order of importance.
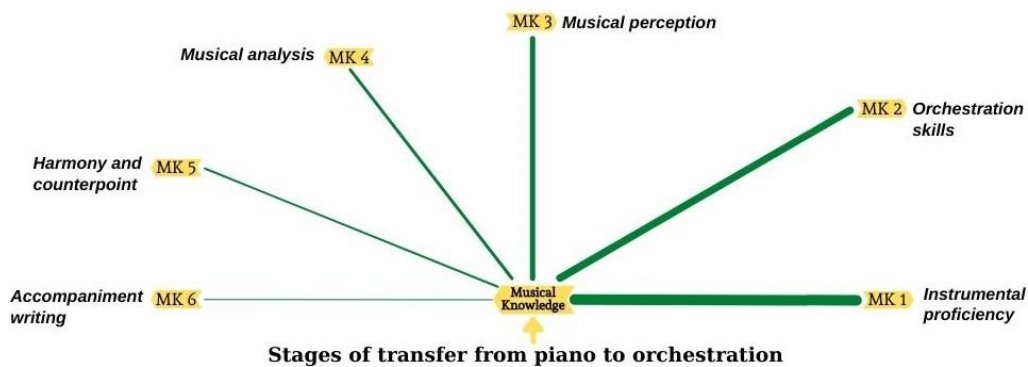

Figure 7:Piano, orchestration and musical knowledge

According to Figure 7, it is seen that instrument knowledge is prioritised before orchestration knowledge. It is understood that all information is interrelated.

1.3. Voice Leading Technique

Music theorists have had two fundamental concerns: chords or simultaneities and the voice leading (O'Donnell, 1997). Voice leading, in this regard, ensures the interaction between chord degrees in a melodic line, following the principles of harmony and counterpoint, to create proper harmonic progressions (Clendinning et al., 2011).

1.4. Purpose of the Research

The current study emphasizes the importance and necessity of developing arranging or orchestration skills in preservice music teachers. However, implementing these skills in the educational practices of music teachers seems to be vague and problematic. This study aims to organize the fundamental approaches of arrangement and orchestration that benefit from different chord progressions used in various music genres in a systematic manner. Furthermore, the study includes the basic concepts and principles of the art of orchestration. The concepts of orchestration and arrangement are also examined, and examples are provided on how composers have used these elements in the past. Lastly, the resulting orchestration and arrangement approaches are applied to a school song.

The research aimed to address the following research questions:

1. How are chords positioned based on root positions and close movements?
2. How can chords written based on root positions be enriched?
3. How is the "Voice Leading" technique applied to chord degrees?
4. How are the root degrees of chords transferred to bass-characterized strings?
5. How can the "Power Chord" technique be incorporated as an orchestration approach for chords?

6. How can the third degrees of chords be transformed into an orchestration approach?
7. How can the combination of Voice Leading and Power Chord techniques be developed as an orchestration approach?
8. How can orchestration and arrangement approaches be applied to a sample school song?

2. RESEARCH METHOD

This research was conducted using qualitative research techniques. It examined the fundamental principles in orchestration and arrangement art, as well as chord progressions used in different music genres, accompanied by sample applications. Based on these, answers were sought to the research questions developed in line with the research objective.

3. FINDINGS

In this part of the study, answers to the research questions were sought. For this purpose, orchestration approaches were transformed into application steps. In order to transfer a chord progression to the piano and string instruments, the following procedures were applied. In the first operation, the chords are written on the piano staff. In the second operation, the upper chord degrees are transferred to 1st Violin, 2nd Violin and Viola. In the third operation, the root sound positions and fifths of the chords are written. In the fourth operation, counterpoint is applied on the main melody. These orchestration techniques are analysed in detail in the findings below.

3.1. Positioning of Chords According to Root Sound Positions

In this section, the first research question was answered (How are chords positioned based on root positions and close movements?). According to Figure 8, Passamezzo Antico chord progression was used in this application. Also, Roman numerals and chords symbols, has been used in harmonic analysis to denote the scale step on which the chord is built. Chord letters, has been used in modern musicology, to denote chord root and quality.

Figure 8:Passamezzo Antico chord progression

According to Figure 9, the chord notes are positioned close to each other. This arrangement of chords is a basic approach in music theory. To achieve an effective performance, the chord degrees are positioned close to each other. In this case, the position of some notes changes. Changed chords are written in detail (for example, E/G).

Figure 9:Passamezzo Antico chord progression and close movements of chords

3.2. Approaches to Enriching Chords

In this section, the second research question is answered (How can chords written based on root positions be enriched?). According to Figure 10, seventh degrees were not added to the first and last chords. In order for the main tone to be heard and perceived easily, the basic state of the chords was preferred in the first and last measures. However, it is seen that the fundamental tone is used twice in these measures. In this section, the Passamezzo Antico chord progression is used.

Figure 10:Adding seventh degrees to chords

Figure 11 shows that the ninth degrees of chords are used in the Passamezzo Antico chord progression. Ninth chords create a jazz music effect in terms of hearing. In order to avoid this as much as possible, the seventh degree of the chord is used in the first and last measures. All chords are in root position.
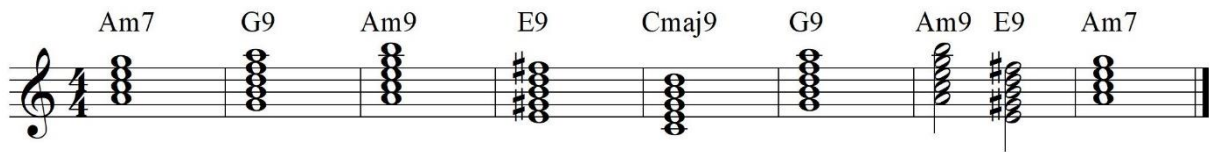

Figure 11:Adding ninth degrees to chords

Figure 12 illustrates the use of the eleventh degrees of chords in the Passamezzo Antico chord progression Especially with eleven chords, the common degrees should be kept in the same place. All non-common degrees should move close to each other. There are important points to be considered in the enrichment of chords. As chord structures become richer, an aural complexity may arise. For this reason, simplification should be made when transferring 11 chords to string instruments.
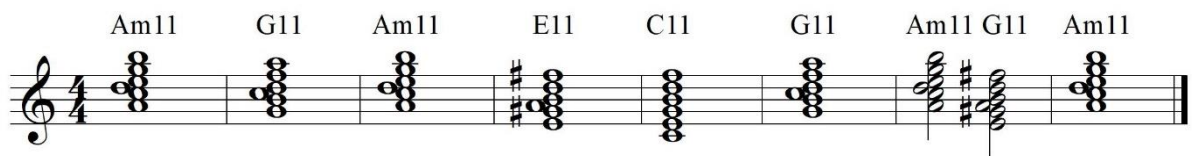

Figure 12. Adding eleventh degrees to chords

3.3. Voice Leading application

In this section, the answer to the third research question was sought (How is the "Voice Leading" technique applied to chord degrees?). According to Figure 13, lateral movements were made between common chord degrees. In the chord degrees that were not common, the closest movements were preferred. In this application example, the chord progression vi, IV, I, V, which is frequently used in pop music, was used. It is an important approach to write chords using the "Voice Leading" technique in order to achieve a balanced sensation. Chord symbols are shown in detail according to the position of the root sounds.
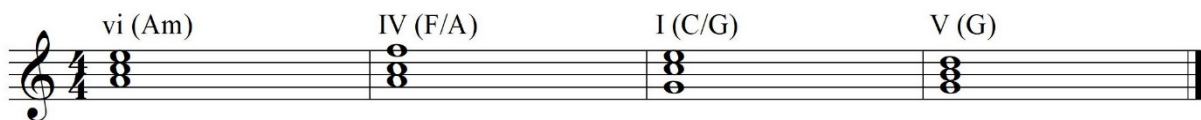

Figure 13:Voice Leading Application: Example 1 (vi - IV, I, V)

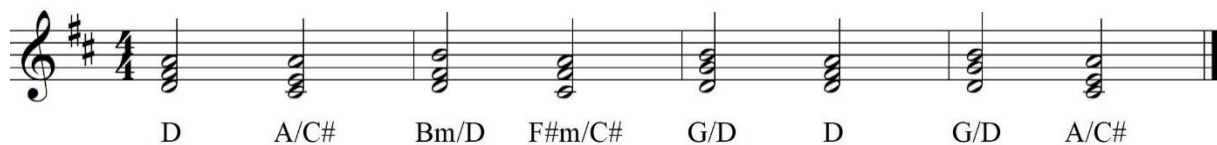Figure 14 shows the application of the Voice Leading technique on Pachelbel's canon.

Figure 14:Voice Leading Practice: Example 2 (Pachelbel's canon)

3.4. Transfer of Root Sounds in Chords to Strings

In this section, the fourth research question is answered (How are the root degrees of chords transferred to bass-characterized strings?). Figure 15 shows that the chords are positioned close to each other. Then, the root degrees of the chords were transferred to the bass part. "Voice Leading technique" was applied in this chord positioning and orchestration process. After the chord degrees were written in this way, they were transferred to the string instruments. These applications are an important process before transferring chord degrees to string instruments. Because they have a guiding role for the orchestration process.

Figure 15: Transferring the degrees of chords to string instruments

3.5. Power Chord Application in Chord Positioning

In this section, the fifth research question was answered (How can the "Power Chord" technique be incorporated as an orchestration approach for chords?). In this chord positioning and orchestration process, the "Voice Leading technique" was applied again. Figure 16 shows that the chord voices were transferred to the string instruments in order. The basic sounds and fifths of the chords were written on the Violoncello instrument. These intervals of 5 make both the psychoacoustics and the orchestration sound more splendid.

Figure 16: Transposition of Pachelbel's Canon for string instruments

3.6. Lowering the Third Degree of Chords by One Octave

In this section, the sixth research question is answered (How can the third degrees of chords be transformed into an orchestration approach?). In order to make an orchestration timbre more perfect, it is an effective approach to transfer the 3rd degrees of the chord down an octave. In this orchestration application, it was not necessary to write the chords in detail. Figure 17 shows how the 3rd degrees of the chord are positioned 1 octave down.

Figure 17: Transferring the third degrees of chords down an octave

3.7. Combination of Power Chord and Loice Leading Techniques

In this section, the seventh research question was answered (How can the combination of Voice Leading and Power Chord techniques be developed as an orchestration approach?). Figure 18 shows the combination of Voice Leading and Power Chord techniques. In the Voice Leading application, the chords are positioned as simply as possible.
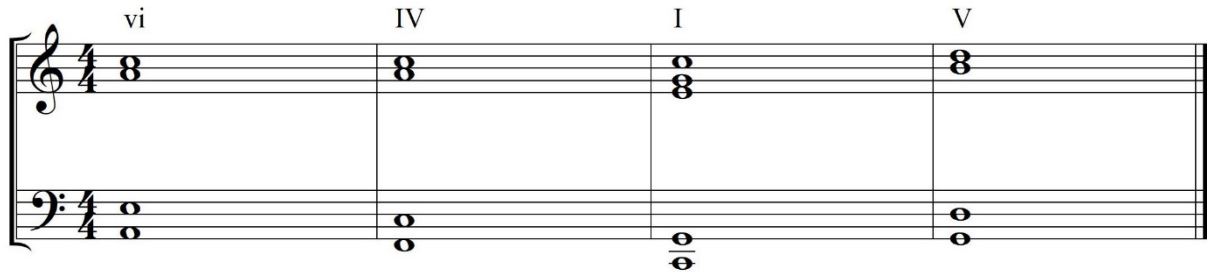

Figure 18:Combination of Power Chord and Loice Leading techniques

3.8. Orchestration Practice on School Song

In this section, the ninth research question is answered. Figure 19 shows that all orchestration approaches were applied to the school song. Melodica performs the main melody. Under the main melody given to the melodica, counterpoint was applied. Unison, 3-part intervals and 6-part intervals were used in the counterpoint. In order to achieve a more colourful and magnificent performance, the third degrees of the chord were lowered by 1 octave. It is seen that the 3rd intervals of the chord are lowered to Viola. On the Violoncello and Contrabass instruments, the root tones and intervals of 5ths of the chord are used.

Figure 19:Orchestration approaches on a school song

4. CONCLUSION

The study examined the combination of basic orchestration techniques and various chord progressions through the lens of arrangement approaches, using a qualitative research method. Approaches derived from fundamental orchestration principles and arrangement techniques were utilized in the transfer of chord progressions to strings. In these approaches, the use of fifths on the violoncello representing the bass line resulted in a clearer and grander sound. Placing the bass voices generally two octaves below the first violin created a contrasting sensation between the inner and outer voices. In addition, high pitches were not preferred in the first violin. Lowering the triadic voices of all chords by one octave contributed to a full and rich tone. Considering these

preferences in the distribution of chord voicings, a balanced and smooth sound can be achieved when taken as a whole.

Previous studies have shown that experimental studies conducted with orchestration techniques have yielded important results related to the field of music education. Uludağ and Parasız (2017) conducted an experimental study to demonstrate the methods of using basic orchestration techniques in school songs. The findings of the study indicated the necessity of including orchestration techniques in music education. In relation to this result, Efe et al. (2019) emphasized the importance of imparting the necessary knowledge and skills to preservice music teachers for orchestrating musical compositions. According to Kenan (1970), it is crucial for preservice music teachers or music teachers to be able to make orchestration arrangements for both piano and various instrument groups.

The current study also emphasizes the importance of equipping music teachers with arranging skills. A study conducted in the Czech Republic revealed that music teachers lacked knowledge about instruments and had insufficient arranging skills. In light of these findings, attention was drawn to the need for training music teachers in arranging, and it was recommended that specialized arranging courses be offered to students in higher education institutions (Urniežius, 2020). In this study, the author systematically presented lecture notes on orchestration and arranging topics. In a related context, McKenzie (2008) investigated the materials used in arrangement and/or orchestration instruction in Australian universities, aiming to highlight the differences between these materials and those used in North America. The research found that instructors designed their own lecture notes.

The main limitation of the current study is that the proposed orchestration and arranging approaches have not yet been transformed into experimental research. Additionally, important topics of orchestration such as melodic division and melodic shadowing techniques were not included in the study.

In future research, the effectiveness of orchestration and arranging approaches can be tested on students. Based on the sample applications in the study, a more detailed research procedure can be prepared. Such research procedure can include different chord progression examples and orchestration techniques. Having students perform a school song accompanied by a virtual orchestra using a melodica or their own voices can enhance their musical skills and interest in music lessons. Consequently, information on preparing such music lesson activities can be incorporated into the content of Harmony and Accompaniment courses, which are part of the music teacher training program. Moreover, necessary steps can be taken to include a separate course that focuses on orchestration and arranging techniques in the music education curriculum. Additionally, collaborative composition studies, which are a relevant topic in modern music pedagogies, can be included in relation to the current research.

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