TONE ROW PARTITIONS IN SCHOENBERG'S MOSES UND ARON
The Volk Partition and the Zwischenspiel Partition

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TONE ROW PARTITIONS IN SCHOENBERG'S *MOSES UND ARON*
The *Volk* Partition and the *Zwischenspiel* Partition

by

William E. Johnson

Submitted in Partial Fulfillment of the
Requirements for the Degree of Master of Music in Theory
in the School of Music, Jordan College of the Arts of Butler University
For my wife, Margaret: I could not have done this without you. Thank you for your unending encouragement and support.

*Soli Deo Gloria.*
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CHAPTER I
PROLEGOMENA

1. Introduction

Arnold Schoenberg's development of twelve-tone serialism in the early 20th Century had profound and far-reaching impact on the musical world. As Schoenberg himself grew and matured as a composer, so did the compositional technique of, and indeed his proficiency with, serialism. The opera Moses und Aron was composed in Schoenberg's third compositional period that lasted from 1923 through Schoenberg's death in 1951 and was characterized almost exclusively by this new technique of twelve-tone serialism. Moses und Aron's first two Acts (as well as the libretto for the third) were written from 1930 to 1932 and based entirely on a single tone row. Though the opera itself was composed in the early 1930s, it had its beginnings as a religious play, similar to Schoenberg's earlier work, Der Biblische Weg. Schoenberg left the opera as it was in 1932 and failed to return to score the libretto in Act III. Despite remaining unfinished, Moses und Aron is still widely regarded as one of Schoenberg's finest works and displays a composer working at the height of his skill.

This project brings to light the brilliance of the tone row Schoenberg chose as his foundation for Moses und Aron through examining the various tone row transformations used throughout the opera as well as their specific setting and orchestration within the context of each scene. More than simply a musical background for the dramatic events of the Exodus narrative, the tone row becomes a character in-and-of itself, transforming and shifting to mirror dramatic events and becoming a driving force throughout the opera. In addition to informing dramatic content and context, the way in which Schoenberg scores the tone row also helps to illuminate the large scale musical form of
each scene and is even essential to the dramatic tension and characterization within the narrative.

In addition, this project endeavors to show that *Moses und Aron* displays Schoenberg’s mastery of the compositional technique of twelve-tone serialism by examining in detail the significance of the **functional orchestration** as well as the divisions, or **partitions**, of Schoenberg’s twelve-tone row. Inseparably connected with a discussion of the functional orchestration and partitioning of Schoenberg’s tone row is a discussion of the different kinds of **counterpoint** that often occur as a result of such partitioning within the choral and instrumental orchestration of *Moses und Aron*. These concepts of functional orchestration, partitioning, and multiple forms of counterpoint are defined and unpacked in the upcoming chapters. As counterpoint functions as such an important aspect of the partitioning of the tone row, a brief discussion of counterpoint in serialism, specifically in *Moses und Aron*, accompanies the discussion of functional orchestration and the row partitioning. This understanding of the function of counterpoint in twelve-tone serial atonality is essential to this study.

Much has been written, specifically by Michael Cherlin, about the formal and dramatic organization of *Moses und Aron* and how Schoenberg’s permutations of his tone row both influence and are influenced by the formal and dramatic context. Cherlin has also given significant attention to defining links between tone row partitions and dramatic events or characters within *Moses und Aron*. An important part of my research, therefore, includes examining the analytical findings of Cherlin as well as those from other scholarly sources. This project also challenges or supports these findings based on my own analysis and discusses what I believe to be a new facet of the organization of *Moses und Aron* not previously revealed in other studies. In Chapter 5 of this project, I bring to light two specific partitions of the row that occur within the choral counterpoint of
the opera and have not been mentioned in any study of *Moses und Aron* that I have discovered in my research.

2. Objectives

In the course of the study, I consider a range of topics directly related to the contrapuntal divisions and partitions of the tone row in *Moses und Aron*. The principle objective of this project is the analysis of unique contrapuntal constructions and determining their function within the larger formal organization and dramatic development of the work as a whole with the ultimate goal of a deeper understanding of the dramatic associations in *Moses und Aron*. This project also endeavors to formulate and formalize terminology and theoretical concepts that may enhance understanding of serial works as a whole.

Another primary objective of this project is conveying difficult theoretical material in terminology that builds gradually in complexity and with a logical and linear progression. I would love for this project to be a useful resource for undergraduate and graduate students alike seeking a broader understanding of twelve-tone serialism and the writings of Schoenberg, specifically *Moses und Aron*. Along with this comes a desire to dispel some misconceptions surrounding the compositional technique of serialism. Sometimes thought of as an extremely mathematical and limiting compositional method, this project will show the vast creative opportunities inherent in serial composition. As such, this presentation will seek to not only facilitate comprehension of the material for those who are just beginning their journey within the field of music theory, but also to give proper attention to expounding on the advanced analytical concepts presented later in this project. As I view this "indiscriminate relevance" as a crucial part of the culmination of my studies, and therefore of this project, I have taken the time and space
necessary to ensure comprehension of the basic tenets of twelve-tone serialism before introducing the more advanced aspects of my analytical findings.

*Moses und Aron* is used as the starting point for gaining a broader understanding of Schoenberg's use of the compositional technique of twelve-tone serialism for two important reasons. First, Schoenberg himself considered *Moses und Aron* to be a tremendous breakthrough for the validity of twelve-tone serialism as a compositional method. For Schoenberg, *Moses und Aron* proved the possibility of successfully sustaining a large-scale work entirely with one tone row. Second, the sheer length of the piece accomplishes two very important objectives in that it gives a large sampling of Schoenberg's compositional techniques as well as showing his creativity as his compositional style adapts to fit the dramatic elements of each scene.

### 3. Organization

The remainder of Chapter I continues introductory material, including a synopsis of the compositional timeline of *Moses und Aron*, a brief discussion of the Biblical/historical setting of the dramatic events of the opera, and a concise overview of the literature that served to inform my project.

The entirety of Chapter 2 is devoted to a surface dialogue of the relevant background and elements of twelve-tone serialism as a compositional practice. This discussion includes a formalization of concepts and terminology that are used throughout the remainder of this discussion.

In Chapters 3 and 4, I look in depth at what has been written concerning the properties and various partitions of the tone row chosen for *Moses und Aron*. Specifically in this section, I examine the writings and analysis of Michael Cherlin, who has spent a great portion of the last 30 years scrutinizing, researching, and sharing his findings on the topic of *Moses und Aron*. Cherlin's doctoral dissertation, *The Formal and Dramatic*
Organization of Schoenberg’s *Moses und Aron*,¹ along with his text, *Schoenberg’s Musical Imagination*,² are among the most significant scholarly contributions to the study of Schoenberg’s compositional style and *Moses und Aron* specifically. In his dissertation, as well as his other texts on the subject, Cherlin bases his analysis of the opera on the intrinsic properties of the tone row that allow Schoenberg to utilize the “relationships among its principal partitionings” to develop and resolve dramatic and musical tension throughout the opera.³ Therefore, the majority of Chapters 3 and 4 consists of examining these row partitions, relationships, and operations and discussing their impact and significance on the organization and dramatic development of *Moses und Aron*. Chapter 3 focuses on partitions that exhibit symmetry, while Chapter 4 examines those partitions that are asymmetric.

Chapter 5 discusses in greater detail the pertinent properties of Schoenberg’s tone row directly relating to my analysis of the Zwischenspiel in *Moses und Aron*. This discussion covers in depth my discovery of two additional partitions, the Volk Partition and the Zwischenspiel Partition, along with their resulting contrapuntal operations. I believe these new findings do not contradict Cherlin’s research but instead serve to supplement his analytical findings.

Chapter 6 presents and formalizes additional techniques and terminology used in the discussion of my formal analysis of the Zwischenspiel with the intention of communicating my findings clearly. A few of these “special techniques” are drawn from Cherlin’s own study of *Moses und Aron*. Terms are thoroughly defined as well as shown in context with excerpts taken from the opera itself. Chapter 6 also provides my

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complete formal analysis of the Zwichenspiel section of Moses und Aron and serves as the culmination of the material presented in previous chapters. This analysis shows detailed excerpts from the score complete with significant findings and interpretation.

Several brief appendices follow the conclusion of my project and provide some completed twelve-tone matrices for the tone row from which Moses und Aron was composed. The first presentation of Moses und Aron’s twelve-tone matrix in Appendix I is given in normative form. This matrix, developed by Schoenberg in 1921, uses the traditional method of labeling the first sounding tone row of the piece, or the row that serves as the basis for the piece, as P₀. The second matrix presented in Appendix II is in the absolute pitch method, where the row transformation starting with the pitch class “C” is understood as the prime form of the row (P₀). The third presentation of the matrix in Appendix III is the one I shall use for my discussion of the opera. This matrix uses the traditional method of determining the prime form (as seen in the first matrix). The “I” forms of the row, however, are labeled based on their inversive combinatoriality with the prime forms of the row, a concept that the reader will understand by the conclusion of this study. Following these Appendices, a glossary of the terminology and definitions used within my analysis concludes my study.

4. Chronology

The following is a brief overview of the compositional timeline of Moses und Aron. The opera had its beginnings in the mind of Schoenberg as an oratorio as early as 1923. In a letter to his close friend and pupil, Alban Berg, dated 16 October, 1933, Schoenberg references the conception of Moses und Aron: “Moses and Aaron, of which you have known since 1928, but which dates from at least five years earlier...”4

Schoenberg began work on the libretto of *Moses und Aron* passionately in September of 1928, and the initial draft of the entire text was completed a little more than a year later, on 16 October, 1928. Schoenberg, however, would continue to alter and edit the libretto as the newly composed musical setting began to reshape and influence the dramatic context.\(^5\)

First sketches of the musical setting for the fully realized libretto began to appear around July of 1930, and by August of that same year Schoenberg had completed the music for the first two scenes of Act I. Schoenberg continued work on Act I throughout the remainder of 1930 and most of 1931. The music for the *Zwischenspiel*, the interlude between Act I and Act II, was also composed during the summer of 1931; however the composer briefly stepped away from the work in the winter of that same year while teaching in Berlin where he had been appointed to the faculty of the Prussian Academy of the Arts.

In October of 1931, Schoenberg moved to Barcelona, Spain due to his poor health. It was here that the composer continued work on Act II of *Moses und Aron* until its completion on March 10, 1932. Following the completion of Act II, Schoenberg again suspended work on the opera due to his ill health. During the following eighteen months, Schoenberg traveled back to Berlin (June, 1932), to Paris (May, 1933), and eventually to the United States in October of 1933 where he held several faculty positions at the Makin Conservatory in Boston, the University of Southern California, and eventually UCLA in Los Angeles where he would reside until his death in 1951.

Though busy with travel and teaching throughout much of his later life, Schoenberg remained a prolific composer and always intended to finish the musical

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setting of Act III of *Moses und Aron*. In fact, in a letter written to a potential publisher in 1933, Schoenberg was optimistic about the completion of the opera:

> The first two acts of the opera “Moses and Aaron” you have read; the third I intend finishing in, at the outside, 6-8 weeks, as soon as I am on holiday. Its effectiveness can be judged only when I can show the music for it as well, the first two acts of course being performable now.\(^6\)

And again in 1937: “I have now seven private pupils, who give me much pleasure but also much work. But nevertheless I hope now to find the time to finish my opera “Moses and Aron”.”\(^7\)

It seems, however, that by November of 1950, Schoenberg had given up ever finishing the score for Act III. In a letter to Francesco Siciliani, the Artistic Director of the *Maggio Musicale Fiorentino*, an annual arts festival held in Florence, Schoenberg suggests several options when performing the work:

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\(^7\) It is interesting to note here that Schoenberg begins referring to the opera as “Moses and Aron” rather than “Moses and Aaron.” As Schoenberg suffered from triskaidekaphobia (the fear of the number 13), it is widely believed that this change was made due to the fact that “Moses and Aaron” contains 13 letters, while “Moses and Aron” (the German spelling) contains only 12. Ironically, the composer died on Friday, July 13\(^{th}\), 1951.

\(^8\) Schoenberg, *Letters*, 201.
It is with the greatest joy that I hear of your intention to give a performance of my opera “Moses und Aaron” during the Maggio Musicale Fiorentino. However, only the first and second acts have been composed, the third existing only as a libretto. There are therefore the following possibilities:

1. A performance of the first two acts, either
   a. omitting the third, or
   b. having it merely spoken. (It is a dialogue between Moses and Aaron, followed, after Aaron’s death, by a long monologue of Moses'.)
2. A performance of only the “Dance round the Golden Calf” (from the second act) or
3. Of the second act only.  

Unfortunately, however, Siciliani elected to not program the opera, and the full work was not premiered on stage until 6 June 1957 in Zurich, 6 years after the composer’s death.

5. Historical Significance

While not crucial to the discussion of the partitioning and counterpoint in Moses und Aron, a knowledge of the historical context of the work, as well as Schoenberg’s own religious beliefs, could prove an important lens through which to gain a broader understanding of the dramatic associations within the opera. Discussion of these historical backdrops certainly speaks to the significance of the opera and helps to solidify its place as a monumental work in music history.

Schoenberg’s personal history and religious background obviously played a role in shaping the dramatic events of Moses und Aron, as well as his decision to focus on this subject matter in the first place. The opera, and perhaps more accurately the play from which the libretto for the opera was taken, was born largely out of Schoenberg’s renewed identity as a Jew. The composer converted to Protestantism early in life (1898), though this fact is disputed among historians. As Hitler rose to power in Germany starting around 1919, it became increasingly more difficult to identify as a Jew in

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German-speaking European nations, and indeed all of Europe. Many historians argue that Schoenberg's self-identification as Protestant was more out of self-preservation than actual religious conviction.

Though identifying as Protestant, life in Europe become gradually more difficult for Schoenberg and his family as Hitler and the Nazi party gained influence in Germany and the surrounding nations. In fact, Schoenberg was faced with the inescapable nature of his Jewish roots with an experience shared with his family at Mattsee, near Salzburg, during the summer of 1921. Schoenberg regularly vacationed at Mattsee with his family, however during this particular visit, they were asked to leave the resort they were staying at by the anti-Semitic administration. This event haunted Schoenberg for years. In fact, in 1923, after reflecting on this experience at Mattsee, he stated in a letter to his old friend, Wassily Kandinsky: "I have at last learnt the lesson that has been forced upon me this year, and I shall never forget it. It is that I am not a German, not a European, indeed perhaps scarcely even a human being (at least, the Europeans prefer the worst of their race to me), but that I am a Jew."

The year of the writing of this letter (1923) coincides with the conception of Moses und Aron in the mind of Schoenberg. It is not difficult to see why Schoenberg felt an intimate connection with this narrative. The story of Exodus is one of a nation, the Jewish nation, without a home and under a terrible oppressive regime. In 1923, Schoenberg, and indeed the entire Jewish nation, were experiencing the beginnings of another great wave of oppression. Schoenberg used his art to speak out against this oppression, and that same year (1923) publicly advocated for the Jewish nation in his play Der Biblische Weg which casts Moses as an ideal personification of a national and

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11 Steinskog, Moses und Aron, 16.
spiritual redeemer. The intimate connection that Schoenberg felt with this narrative did not stop there, however.

As Nazi influence continued to spread, Schoenberg increasingly felt like a man without a home. In fact, just as Moses und Aron was taking shape in early 1933, Schoenberg was unceremoniously dismissed from his position as an instructor at the Prussian Academy of Arts, where he had been teaching since 1926, for being a Jew and a leading exponent of "degenerate art." This same year, Schoenberg fled Nazi persecution, emigrating to the United States where he publicly returned to Judaism. This further solidifies his close connection with the Exodus narrative. As the Israelites fled the oppression of Pharaoh and journeyed to the Promised Land, so Schoenberg fled the oppressive climate of Europe.

Schoenberg continued to grow increasingly fond of Jewish subject matters later in life, evidenced by such works as an English setting of the kol nidrei in 1938 (the same year as the Kristallnacht pogrom in Germany and Austria), A Survivor from Warsaw (1947), and a choral setting of Psalm 130 in the original Hebrew (1950). Alexander Ringer referenced the deep connection Schoenberg felt with these pieces, calling A Survivor from Warsaw the "ultimate artistic expression of both Schoenberg’s lifelong Jewish trauma and his abiding faith."  

I believe, however, Schoenberg’s truest connection in any of his works is in the character of Moses in Moses und Aron: an exile from his homeland desperately clinging to the promises of God. Like Moses, Schoenberg lived out his life wandering in the desert waiting for the fruition of these promises. This time in the desert, however, would not defer his faith in God nor his passion for the Jewish nation. In fact, in his letter of

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acceptance after being named an honorary president of the Israel Academy of Music in Jerusalem mere weeks before his death in 1951, Schoenberg held firmly to these ideals: "Just as God chose Israel to be the people whose task it is to maintain the pure, true, Mosaic monotheism despite all persecution, so too it is the task of Israeli musicians to set the world an example."14

6. Biblical Setting

*Moses und Aron* follows the Biblical narrative recounting the calling of Moses by God to deliver the people of Israel from the hands of the Egyptians. The libretto in the opera is a very loose paraphrase of Martin Luther’s German Bible, though the original text for the play on which the opera was based was taken verbatim from this Biblical translation, that Schoenberg always kept at his bedside.15 *Moses und Aron* had its beginnings as an oratorio; however, while the narrative itself is clearly taken from the book of Exodus, Schoenberg takes tremendous creative liberties with the specific details of the events. In fact, in a letter written to Alban Berg on 5 August 1930, Schoenberg stated that he wanted the libretto of *Moses und Aron* to reflect his own voice and his own approach to the original Biblical text.16 This unique approach to the text results in creative liberties that range in their significance from paraphrasing the existing prose to, in some extreme cases, blatantly omitting or overtly contradicting the Biblical source material. An example of Schoenberg’s paraphrasing of the Biblical text can be seen in the instance below:

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Another example of paraphrase is found in measures 71 through 85, where God promises the people of Israel that He will lead them out of slavery in Egypt:

\[\text{Moses und Aron, mm. 71-85}\]

Dieses Volk ist ausserwählt, vor allen Völkern, das Volk des einzigen Gottes zu sein, daß es ihn erkenne und sich ihm allein ganz widme; daß es alle Prüfungen bestehe, denen in Jahrtausenden der Gedanke ausgesetzt ist. Und das verheisse ich dir: Ich will euch dorthin führen, wo ihr mit dem Ewigen einig und allen Völkern ein Vorbild werdet.

\[\text{Translation}\]

This people is chosen, before all peoples, to be the people of the One God, that they may know Him and give all to Him alone, that they shall endure all hardships, that thought has exposed in the millennia. And this I promise to you: I will lead you where you shall be one with the Eternal, to become a model for all people. \(^{18}\)

In his doctoral dissertation, Cherlin states that he believes this to be a direct contradiction of Exodus 3:17, "I will bring you up out of the affliction of Egypt...unto a land flowing with milk and honey." \(^{19}\) I disagree, however, and think that Schoenberg is merely creatively interpreting the promise God has for the Israelite nation, which is

\[\text{17 Cherlin, The Formal and Dramatic Organization, 18.}\]

\[\text{18 Ibid., 22.}\]

\[\text{19 Ibid., 22.}\]
supported by Schoenberg's use of the promise taken directly from the Biblical text much later in Act I, in measures 894 through 913:

Moses und Aron, mm. 894-913

Er hat euch auserwählt, vor allen Völkern das Volk des einzigen Gottes zu sein, ihm allein zu dienen, keines andern Knecht! Ihr werdet frei sein von Fron und Plage! Das gelobt er euch: Er wird euch führen in das Land wo Milch und Honig fließt, und ihr sollt genießen leiblich was euren Vätern verheißen geistig.

Translation

He has chosen you, before all peoples, to be the people of the One God, to serve Him alone, with no other servitude! You will be free from slavery and plague! This He promises you: He will lead you to the land where milk and honey flows, and you shall enjoy physically that which was promised to your fathers spiritually.

The more striking examples of Biblical contradiction occur in Act II. For example, the vast majority of the dramatic events found in the Golden Calf and the Altar scene, Das Goldene Kalb und der Altar (Act II, Scene 3), have no real basis in the context of the Biblical narrative of Exodus.

7. Pertinent Literature

To conclude the discussion of introductory material, I would like to present a few texts that have been instrumental in my research and comprehension of Moses und Aron. As stated previously, much has been written about Schoenberg and Moses und Aron, specifically regarding the musical and structural organization therein, by Michael Cherlin. A considerable portion of the information relevant to this discussion will be taken from Cherlin's 1983 doctoral dissertation from Yale University and the subsequent 2007 text that serves as the culmination of his research on Schoenberg titled, Schoenberg's Musical Imagination. Though much of the discussion in upcoming

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20 Cherlin, The Formal and Dramatic Organization, 23.
chapters will build upon Cherlin's findings and analysis, it is important to note the texts that served to inform his and my theoretical understanding of *Moses und Aron* and twelve-tone technique as a whole.

Many ideas already introduced in this study, as well as portions of the material in subsequent sections, are informed by Schoenberg's own writings on music theory and twelve-tone serialism. Chief among these sources is *Style and Idea*,\(^{21}\) a collection of fifteen essays, articles, and sketches authored by Schoenberg and edited and translated by Dika Newlin. Several articles within this text prove to relate to the topic of this discussion, including "Composition with Twelve Tones," written in 1941; "Criteria for the Evaluation of Music," written in 1946; and "New Music, Outmoded Music, Style and Idea," also written in 1946.

Another important source in the understanding of Schoenberg's fully mature twelve-tone method is Joseph Rufer's *Die Komposition mit Zwölf Tömen*.\(^{22}\) Rufer's groundbreaking text offers a unique view into the mind of Schoenberg's compositional style and character, as he personally sat under Schoenberg's tutelage, though much of his understanding of the theoretical implications of twelve-tone technique has since been expounded upon.

Several of Milton Babbitt's texts are also an important resource in the formulation of the foundation of this study. In his article "Some Aspects of Twelve-Tone Composition,"\(^{23}\) Babbitt generalizes the concept of combinatoriality as well as distinguishes Schoenberg's hexachordal "semi-combinatoriality" from the various other


\(^{22}\) Josef Rufer, *Composition with Twelve Tones Related Only to One Another* (London: Barrie and Jenkins, 1970).

types of combinatoriality that are discussed at length in Chapter 2. Another related concept described by Babbitt in the aforementioned article and that is crucial to my study is the notion of functional orchestration. This vital concept is also unpacked and discussed further in the subsequent chapter.

David Lewin, whose tone row labeling nomenclature I am adopting for this study, has written extensively about twelve-tone theory and has also published a complete analysis of Act I, Scene 1 of Moses und Aron. His writings have greatly influenced Cherlin's, and therefore my, understanding of Moses und Aron, and his works shall be referenced often in this study. Another important text that has greatly impacted my understanding of the twelve-tone serial compositional method in general is Allen Forte's 1973 text, The Structure of Atonal Music.24

Finally, I would like to present some texts available for further reading concerning different aspects of Schoenberg's Moses und Aron that are not directly dealt with in this study. First, Karl Woerner's book, Schoenberg's Moses and Aaron,25 presents a wonderful introduction to the opera for the general reader, containing such information as the historical context of the work, the initial performances and reception of the opera, and the description of important leitmotifs integral to the dramatic context of the work. Second, for further reading on the technical aspects of the partitions of the tone rows themselves, Graham Hair's 1973 doctoral dissertation, "The Structure of Schoenberg's Moses and Aaron,"26 provides row content for the majority of the opera while illustrating and expounding upon the various partitions of the row. Third, for those interested in what can be inferred about Schoenberg's ideas on God and his personal religious journey

26 Graham Hair, "The Structure of Schoenberg's Moses and Aaron (University of Sheffield, 1973).
through the events of Moses und Aron, Pamela Cooper-White’s 1985 text, Schoenberg and the God-idea: The Opera “Moses und Aron” (Studies on Musicology)²⁷ presents a thought-provoking look at the composer’s religious and philosophical thought processes and their resulting impact on the opera.

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CHAPTER II

TWELVE-TONE SERIALISM

1. Overview

Just as an understanding of Schoenberg's historical and Biblical context helps to inform an intelligent discussion of the dramatic elements of *Moses und Aron*, so a preliminary discussion of the fundamental properties of the compositional technique of twelve-tone serialism informs the intelligent discussion of the theoretical complexities of the work. This section gives a brief outline of the development and relevant characteristics of twelve-tone serialism.

Serialism was born in the mind of Arnold Schoenberg in 1921, though he first shared his revolutionary compositional technique with his closest associates in 1923. Preceded historically by primarily “freely” atonal pieces in the early twentieth century, twelve-tone serialism emerged as a method of bringing order and structure to the world of atonality. Schoenberg’s new compositional technique is built on the systematic ordering of all twelve pitch classes of the chromatic scale rather than any sort of tonal hierarchy. Schoenberg labeled these ordered collections “tone rows.” Schoenberg himself described the technique as a “method of composing with twelve tones which are related only with one another.” ¹

While other composers who were contemporaries of Schoenberg, such as Josef Matthias Hauer, also experimented with systems of ordering chromatic pitch classes in atonal works, Schoenberg’s twelve-tone technique is widely considered to be the most

historically noteworthy and significant. In fact, twelve-tone serialism became the dominant form of composition utilized by the Second Viennese School (Schoenberg, Alban Berg, Anton Webern, and Hanns Eisler) for the next twenty years following its conception.

Schoenberg viewed twelve-tone serialism neither as a departure from or rebellion against traditional tonality nor especially as a dissolving of musical order, but rather as merely a natural progression from the structural order of tonality to a new organizational methodology. In fact, Rudolph Reti, an early proponent of twelve-tone serialism, argues that it was Schoenberg’s frustrations with the lack of order in free atonality that led to his development of serialism. In his text, *Tonality, Atonality, Pantonality: A Study of Some Trends in Twentieth Century Music*, Reti states that “to replace one structural force (tonality) by another (increased thematic oneness) is indeed the fundamental idea behind the twelve-tone technique.” Schoenberg himself states in his notes that serialism was meant to “replace those structural differentiations provided formerly by tonal harmonies” (emphasis mine).

2. The Tone Row

I now turn my attention away from the development and significance of twelve-tone serialism as a revolutionary compositional technique and commence with the intricacies and nuances of the genre itself. Specifically, this discussion focuses on the assembly of tone rows themselves, as they serve as the structural foundations, or

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4 Schoenberg, *Style and Idea*, 12.
“building blocks,” of any twelve-tone serial composition. As we have previously established, a twelve-tone serial composition is comprised of ordered presentations of the twelve pitch classes in the chromatic scale, or tone rows. In this next section, I examine the specific properties and characteristics of these tone rows that inform my later analysis.

In his text, *Serial Composition and Atonality: An Introduction to the Music of Schoenberg, Berg, and Webern*, George Perle postulates that every tone row used in twelve-tone serialism inherently must possess four specific characteristics. These four preconditions are the basis of our modern theoretical analytical terminology for twelve-tone serialism and are listed below:

1. The row is a specific ordering of all twelve notes of the chromatic scale (without regard to octave placement).
2. No note is repeated within the row.
3. The row may be subjected to interval-preserving transformation — that is, it may appear in inversion, retrograde, or retrograde-inversion, in addition to its “original” or prime form.
4. The row in any of its four transformations may begin on any degree of the chromatic scale, in other words it may be freely transposed. Transpositions are indicated by an integer between 0 and 11 denoting the number of semitones; thus if the original form of the row is denoted Po, then P1 denotes its transposition upward by one semitone.5

The resulting combination of the transformation of the row (prime, inversion, retrograde, or retrograde-inversion) with the transpositional level of the row, that is referenced in the second part of the fourth precondition, is referred to as the set form or row form. For example, the set form identification of the non-transposed prime row is “Po.” If, however, we are referring to the retrograde-inversion of the prime row transposed up by three semitones, the set form identification would be “R13.” The set

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forms resulting from these combinations indicate that every tone row has a possible 48 transformations.

To better illustrate these 48 possible transformations of a given tone row, the definition of each transformation is given in Table 2.1 with an accompanying example of the corresponding transformation of the prime form of the tone row from *Moses und Aron*. The un-transposed prime form of the row is given first in Example 2.1.

**Example 2.1: Moses und Aron Prime Tone Row**

\[
\begin{array}{cccccccccccc}
P_0 = & A & B_b & E & D & E_b & D_b & G & F & G_b & A_b & B & C \\
\end{array}
\]
Table 2.1: Interval Preserving Transformations

**Prime form:** The tone row chosen as the basis of the piece which may be transposed up or down by interval and is labeled in analysis “P” to indicate Prime and assigned an integer from 0 through 11 to indicate the interval of transposition.

\[ P_1 = \text{Prime form of the tone row transposed up one semitone.} \]

\[ P_1 = B^b \quad B \quad F \quad E^b \quad E \quad D \quad A^b \quad G^b \quad G \quad A \quad C \quad D^b \]

**Inversion:** The intervalllic opposite of the tone row chosen as the basis of the piece \((P_0)\) which also may be transposed up or down by interval and is labeled in analysis “I” to indicate Inversion and assigned an integer from 0 through 11 to indicate the interval of transposition.

\[ I_1 = \text{Intervalllic opposite of the prime form of the tone row transposed up one semitone.} \]

\[ I_1 = B^b \quad A \quad E^b \quad F \quad E \quad G^b \quad C \quad D \quad D^b \quad B \quad A^b \quad G \]

**Retrograde:** The sequential reversal of the tone row chosen as the basis of the piece \((P_0)\) which also may be transposed up or down by interval and is labeled in analysis “R” to indicate Retrograde and assigned an integer from 0 through 11 to indicate the interval of transposition.

\[ R_1 = \text{Sequential reversal of the prime form of the tone row transposed up one semitone.} \]

\[ R_1 = D^b \quad C \quad A \quad G \quad G^b \quad A^b \quad D \quad E \quad E^b \quad F \quad B \quad B^b \]
Table 2.1 (Continued)

**Retrograde Inversion:** The intervallic opposite of the sequential reversal of the tone row chosen as the basis of the piece \((P_0)\) which also may be transposed up or down by interval as is labeled in analysis “RI” to indicate Retrograde Inversion and assigned an integer from 0 through 11 to indicate the interval of transposition.

\(RI_1 = \) Intervallic opposite of the sequential reversal of the prime form of the tone row transposed up one semitone.

\[
\begin{array}{cccccccc}
G & A^b & B & D^b & D & C & G^b & E & F & E^b & A & B^b \\
\end{array}
\]

While these four preconditions given by Perle are true of the tone rows that make up twelve-tone serial compositions, they have very loose application within the analysis of those compositions. For example, though precondition number two states that notes may not be repeated within a row, this does not mean that, contrary to the logical conclusion drawn from this precondition, no note in a twelve-tone serial work may be repeated until all twelve have appeared in the score. Although, when Schoenberg himself addressed this issue within his own compositions in his essay, “Composition with Twelve Tones,” he expressed a preference that such “deviations” from the sequential presentation of the tone row not occur until later in the work:

It will be observed that the succession of the tones according to their order in the set has always been strictly observed. One could perhaps tolerate a slight digression from this order (according to the same principle which allowed a remote variant in former styles) in the later part of a work, when the set had already become familiar to the ear. However, one would not thus digress at the beginning of a piece.\(^5\)

---

While Schoenberg does seem to leave room for “digression” from the sequential presentation of the tone row, he states that it should first become “familiar to the ear.” This treatment of digressions and alterations of the tone row is reminiscent of the tonal concept of thematic or motivic variation within a composition and is quite logical. One must present the theme or motive (or tone row) enough times before varying it, so that the listener is able to recognize that there is an alteration.

This idea of digression from the ordinal sequential presentation of the tone row grew more and more important as Schoenberg matured as a composer. In his article “Some Aspects of Twelve-Tone Composition,” Milton Babbitt presents the concept of functional orchestration. This idea of functional orchestration builds upon the idea of “digression” from the ordered presentation of a tone row as described earlier by Schoenberg in his essay “Composition with Twelve Tones,” and provides a more clear understanding of Schoenberg’s mature serial technique. Functional orchestration is the notion that pitch classes extracted from a selected tone row may be given linear emphasis in one voice while the remaining pitch classes of the row sound in another voice or in the accompaniment. In other words, pitch classes that are not adjacent in a tone row may sound as musical adjacencies in individual voices. Example 2.2 contains a visualization of the functional orchestration of row P₂ taken from the measures 499 through 501 of Act I of Moses und Aron.¹⁰

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⁷ Schoenberg, Style and Idea, 226.
⁹ Schoenberg, Style and Idea, 226.
¹⁰ In Example 2.2 (and all examples to follow), “OC” stands for Ordinal Content. Ordinal Content assigns a numerical value from 0-11 to each pitch class based on the order in which it appears in the tone row. In P₂, F⁷ is the third pitch class in the row; therefore, its ordinal number is 2.
Example 2.2: Functional Orchestration

\[
OC = 0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad 7 \quad 8 \quad 9 \quad 10 \quad 11
\]

\[
P_2 = B \quad C \quad F^\# \quad E \quad F \quad E_b \quad A \quad G \quad A_b \quad B_b \quad D_b \quad D
\]

Moses und Aron: Act I, Scene 4 (mm. 499-501)

This concept of functional orchestration serves as the basis for understanding Schoenberg’s contrapuntal compositional style and indeed provides the very backbone for Cherlin’s study of the partitions of Moses und Aron’s tone row. This concept also serves as the foundation for my study in Moses und Aron, as it lays the groundwork for understanding the partitioning of a tone row within the contrapuntal texture of the opera as a whole. This is important as many of the partitions introduced in the following chapters occur in the context of this contrapuntal texture. I continue discussion of the alterations of the tone row specific to Moses und Aron in upcoming chapters, but for now I will return to the discussion of principles and characteristics of tone rows in general.
3. Tone Row Properties

Beyond the set preconditions set forth by Perle present in all twelve-tone rows, there are specific properties possessed by some (or all, in some cases) that are particularly noteworthy and useful in a theoretical understanding of Moses und Aron. The first important property to be discussed has already been mentioned above: hexachordal inversional combinatoriality, but before we begin that discussion, we must first define a few terms that help lay the foundation for a proper understanding of combinatoriality. In order to understand combinatoriality, it is necessary to appreciate the concepts of row derivation and partitioning. Row derivation can be understood as the combination of segments of complete tone rows to create another aggregate, or a complete set of the full chromatic scale. Derived rows are most commonly formed by the segmentation of two or more full rows into trichords, tetrachords, or hexachords. Partitioning, on the other hand, is the opposite of row derivation. Partitioning is the process of segmenting a single, complete tone row into smaller fragments usually based on number of pitches (such as with tetrachords and hexachords) or some other inherent relationship among the pitch classes (such as Cherlin's X+Y Partition, which I discuss in detail in Chapter 3).

Combinatoriality is a specific type of row derivation. Rows that share this property of combinatoriality are able to form complete aggregates with each other from their derived segments. Combinatoriality is more often than not found by segmentation of tone rows by hexachord, and is therefore often referred to as "hexachordal combinatoriality." An example of hexachordal combinatoriality can be seen in two rows I have created for this purpose in Example 2.3. Two aggregates are formed horizontally in each row, and two aggregates are also formed vertically with the first hexachords of each row and the second hexachords of each row.
This concept of hexachordal combinatoriality is a defining characteristic of not only the tone row that serves as the musical foundation for Moses und Aron, but in Schoenberg’s mature twelve-tone serial technique as a whole. This is evident both in the rows chosen for Schoenberg’s mature serial works and in his writing about serialism:

Later, (after the “Wind Quintet, Op. 26”) especially in larger works, I changed my original idea, if necessary, to fit the following conditions: at the inversion of the fifth below the first six tones, the antecedent, should not produce a repetition of one of these six tones, but should bring forth the hitherto unused tones of the chromatic scale. Thus the consequent of the basic set, the tones 7 through 12, comprises the tones of this inversion, but of course, in a different order.¹¹

In other words, Schoenberg is describing the hexachordal combinatoriality found in the tone row he uses in the “Wind Quintet, Op. 26.” The description of the combinatoriality in this excerpt outlines that the pitch classes found in the first hexachord of $I_{11}$ are the “hitherto unused tones” of the first hexachord of $P_0$. This can be observed in Example 2.4.

¹¹ Schoenberg, Style and Idea, 225.
There are four categories of hexachordal combinatoriality: hexachordal prime combinatoriality, hexachordal retrograde combinatoriality, hexachordal inversional combinatoriality, and hexachordal retrograde-inversional combinatoriality. You will recognize these four categories as mirroring the four interval-preserving transformations to which a tone row may be subjected. This is no coincidence, as the name of each type of combinatoriality is linked with corresponding tone row transformation, as noted in Table 2.2. The rows used in this table have been constructed solely for the purpose of this project.
Table 2.2: Types of Hexachordal Combinatoriality

Hexachordal Prime Combinatoriality – The lack of shared pitch classes between a hexachord and one or more of its prime transpositions. Because it is determined by examining row transpositions, this type of combinatoriality is also referred to as Transpositional Combinatoriality.

Hexachordal Retrograde Combinatoriality – The lack of shared pitch classes between a hexachord and its retrograde transformation. This type of combinatoriality is considered inconsequential as any tone row has hexachordal retrograde combinatoriality with itself.
Table 2.2 (Continued)

Hexachordal Inversional Combinatoriality – The relationship between two tone rows such that the principal’s primary hexachord is comprised of a tone row inversion’s second hexachord (at any transposition level), though the pitch classes need not be presented in the same order. Thus, the first hexachord of the prime row and one or any inversional transposition create an aggregate.

Hexachordal Retrograde-inversional Combinatoriality – The lack of shared pitch classes between a hexachord and its retrograde-inversional transformation.

By far the most significant of these four categories in the writings of Schoenberg is hexachordal inversional combinatoriality. Indeed, this version of combinatoriality is the only one present in the tone row used for Moses und Aron (with the exception of the always existing retrograde combinatoriality). Hexachordal inversional combinatoriality is a crucial component in the writings of Schoenberg, and his mastery of utilizing this property of Moses und Aron’s tone row is evident on every page of the opera.
4. The Twelve-Tone Matrix

As discussed earlier in this chapter, each tone row has 48 unique transformations arrived at by transposition, inversion, or sequential reversal that could appear in a serial work based on that specific tone row. These 48 transformations are represented on an analytical tool called a **twelve-tone matrix**. Given in Figure 2.1 is the traditional representation of the twelve-tone matrix for Schoenberg's *Moses und Aron*.

**Figure 2.1: Traditional Matrix for Moses und Aron**

<table>
<thead>
<tr>
<th>(P_0)</th>
<th>A</th>
<th>B</th>
<th>E</th>
<th>D</th>
<th>E</th>
<th>D</th>
<th>G</th>
<th>F</th>
<th>G</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>R_0</th>
</tr>
</thead>
<tbody>
<tr>
<td>(P_{11})</td>
<td>A</td>
<td>B</td>
<td>E</td>
<td>D</td>
<td>E</td>
<td>D</td>
<td>G</td>
<td>F</td>
<td>G</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>R_{11}</td>
</tr>
<tr>
<td>(P_5)</td>
<td>D</td>
<td>E</td>
<td>A</td>
<td>G</td>
<td>A</td>
<td>G</td>
<td>C</td>
<td>B</td>
<td>B</td>
<td>D</td>
<td>E</td>
<td>F</td>
<td>R_5</td>
</tr>
<tr>
<td>(P_7)</td>
<td>E</td>
<td>F</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>D</td>
<td>C</td>
<td>D</td>
<td>E</td>
<td>F</td>
<td>G</td>
<td>R_7</td>
</tr>
<tr>
<td>(P_9)</td>
<td>E</td>
<td>F</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>D</td>
<td>C</td>
<td>D</td>
<td>E</td>
<td>F</td>
<td>G</td>
<td>R_9</td>
</tr>
</tbody>
</table>

The familiarization with the twelve-tone matrix, as well as the nomenclature used to discuss it, is essential for understanding the advanced concepts introduced later in this section as well as the analytic work presented in Chapter 6. At this point in the discussion, it may be useful to note two specific details about the matrix used in my analysis. First, we are using the traditional method of labeling the prime form of the row, rather than the absolute pitch method. In the traditional method of labeling rows, the first sounding row in a particular piece is given the designation of prime form (\(P_0\)). All other
transformations are then labeled based on their relation to this initial prime row. In the absolute pitch method, however, the tone row starting with the pitch class “C” is always designated the prime form of the row \( (P_o) \). The resulting matrix contains the same row transformations; however the labels are assigned in relation to a different prime row. The absolute pitch matrix for *Moses und Aron* is provided in Figure 2.2:

**Figure 2.2: Absolute Pitch Matrix for *Moses und Aron***

<table>
<thead>
<tr>
<th>( P_9 )</th>
<th>( P_{10} )</th>
<th>( P_7 )</th>
<th>( P_6 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( A )</td>
<td>( B_b )</td>
<td>( E )</td>
<td>( G )</td>
</tr>
<tr>
<td>( B_b )</td>
<td>( A )</td>
<td>( D )</td>
<td>( F )</td>
</tr>
<tr>
<td>( E_b )</td>
<td>( G_b )</td>
<td>( A )</td>
<td>( B_b )</td>
</tr>
<tr>
<td>( D_b )</td>
<td>( G )</td>
<td>( F )</td>
<td>( B )</td>
</tr>
<tr>
<td>( G )</td>
<td>( F )</td>
<td>( B )</td>
<td>( C )</td>
</tr>
<tr>
<td>( B )</td>
<td>( C )</td>
<td>( F )</td>
<td>( G )</td>
</tr>
<tr>
<td>( D )</td>
<td>( F )</td>
<td>( B )</td>
<td>( G )</td>
</tr>
<tr>
<td>( E )</td>
<td>( F )</td>
<td>( B )</td>
<td>( G )</td>
</tr>
<tr>
<td>( G )</td>
<td>( F )</td>
<td>( B )</td>
<td>( G )</td>
</tr>
</tbody>
</table>

Secondly, I am not using the traditional vocabulary for naming the forms of row transformations. In this methodology, as we have previously discussed, the prime form of a given row is identified as \( P_0 \) and in the tone row Schoenberg chose to use for *Moses und Aron*, the hexachordally inversionally combinatorial row is identified as \( I_3 \). However, this is not true of all twelve-tone rows. \( I_3 \) simply happens to be the row that is inversionally combinatorial with \( P_0 \) in this specific instance. In other words, the structural priority that governs the labeling of tone row transformations is always given to the first pitch class in a row form. For instance, in the twelve-tone matrix listed in Figure 2.2, \( I_3 \) is
assigned its label not because it is the hexachordally inversionally combinatorial row to $P_0$, but because it is the intervallic inversion of the prime form of the row that begins with the pitch class “C” that is three semitones higher than the beginning pitch class of $P_0$. Labeling row transformations in this fashion results in a traditional twelve-tone matrix, as seen in the first matrix presented in Figure 2.1. $P_0$ and its hexachordally inversionally combinatorial row, $I_3$, in this traditional method are listed in Example 2.5.

**Example 2.5: $P_0$ and $I_3$ in Traditional Labeling**

![Example 2.5](image)

This clarification of nomenclature, though seemingly redundant, is important as many theorists who have written extensively about *Moses und Aron* have chosen to use nomenclature popularized by David Lewin. An example of this nomenclature may be found in Lewin’s article, “*Moses und Aron*: Some General Remarks, and Analytic Notes for Act 1, Scene 1,” published in *Perspectives of New Music*. In Lewin’s nomenclature that we shall be using for the remainder of this project, the prime form of the tone row is still considered to be the first complete row appearing in the work; however it is instead labeled “$S_0$.” The “S” has its origins in Lewin’s Transformational Theory (that is not discussed in this project) and stands for “set” or “segment.” The more important

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distinction between these two labeling methods, however, is the labeling of the Inversional forms of the row, which is why I am adopting Lewin’s terminology. Lewin believes, as does Cherlin, that due to Schoenberg’s propensity to use tone rows that inherently fit the conditions of combinatoriality, it is logical that the inversional combinatoriality of the row, rather than the beginning pitch class of the row, be given structural priority when labeling. Therefore, the label $l_0$ is assigned to the row that is hexachordally inversionally combinatorial to the prime row ($P_0$). In this new matrix for Moses und Aron’s tone row, then, the previously labeled $l_3$ is for the remainder of this project reassigned the label $l_0$. To better visualize this, the un-transposed, prime form of the tone row used in Moses und Aron is listed in Example 2.6 along with its hexachordally inversionally combinatorial row in this new nomenclature.  

**Example 2.6: $S_0$ and $l_0$ in Lewin’s Labeling**

![Example 2.6: $S_0$ and $l_0$ in Lewin’s Labeling](image)

When adopting this vocabulary, we end up with the twelve-tone matrix listed in Figure 2.3:

---

Figure 2.3: Lewin's Matrix for Moses und Aron

<table>
<thead>
<tr>
<th></th>
<th>l₉</th>
<th>l₁₀</th>
<th>l₄</th>
<th>l₂</th>
<th>l₃</th>
<th>l₇</th>
<th>l₅</th>
<th>l₆</th>
<th>l₈</th>
<th>l₁₁</th>
<th>l₀</th>
</tr>
</thead>
<tbody>
<tr>
<td>S₀</td>
<td>A</td>
<td>Bb</td>
<td>E</td>
<td>D</td>
<td>Eb</td>
<td>Dₑ</td>
<td>G</td>
<td>F</td>
<td>Gb</td>
<td>A₀</td>
<td>B</td>
</tr>
<tr>
<td>S₁₁</td>
<td>Ab</td>
<td>A</td>
<td>Eb</td>
<td>Dₑ</td>
<td>D</td>
<td>C</td>
<td>Gb</td>
<td>E</td>
<td>F</td>
<td>Gb</td>
<td>Bb</td>
</tr>
<tr>
<td>S₀</td>
<td>D</td>
<td>Eₐ</td>
<td>A</td>
<td>G</td>
<td>A₀</td>
<td>Gb</td>
<td>C</td>
<td>Bb</td>
<td>B</td>
<td>Dₐ</td>
<td>E</td>
</tr>
<tr>
<td>S₇</td>
<td>E</td>
<td>F</td>
<td>B</td>
<td>A</td>
<td>A₀</td>
<td>D</td>
<td>C</td>
<td>Dₐ</td>
<td>E</td>
<td>Gb</td>
<td>G</td>
</tr>
<tr>
<td>S₆</td>
<td>Eₐ</td>
<td>E</td>
<td>Bb</td>
<td>A₀</td>
<td>A</td>
<td>G</td>
<td>Dₐ</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>F</td>
</tr>
<tr>
<td>S₆</td>
<td>F</td>
<td>Gb</td>
<td>C</td>
<td>Bb</td>
<td>B</td>
<td>A</td>
<td>Eₐ</td>
<td>Dₐ</td>
<td>D</td>
<td>E</td>
<td>G</td>
</tr>
<tr>
<td>S₂</td>
<td>B</td>
<td>C</td>
<td>Gb</td>
<td>E</td>
<td>F</td>
<td>Eₐ</td>
<td>A</td>
<td>G</td>
<td>A₀</td>
<td>Bb</td>
<td>Dₐ</td>
</tr>
<tr>
<td>S₃</td>
<td>Dₐ</td>
<td>D</td>
<td>A₀</td>
<td>Gb</td>
<td>G</td>
<td>F</td>
<td>B</td>
<td>A</td>
<td>Bb</td>
<td>C</td>
<td>Eₐ</td>
</tr>
<tr>
<td>S₃</td>
<td>C</td>
<td>Dₐ</td>
<td>G</td>
<td>F</td>
<td>Gb</td>
<td>E</td>
<td>Bb</td>
<td>A₀</td>
<td>A</td>
<td>B</td>
<td>D</td>
</tr>
<tr>
<td>S₁</td>
<td>Bb</td>
<td>B</td>
<td>F</td>
<td>Eₐ</td>
<td>E</td>
<td>D</td>
<td>A₀</td>
<td>Gb</td>
<td>G</td>
<td>A</td>
<td>C</td>
</tr>
<tr>
<td>S₉</td>
<td>G</td>
<td>A₀</td>
<td>D</td>
<td>C</td>
<td>Dₐ</td>
<td>B</td>
<td>F</td>
<td>Eₐ</td>
<td>E</td>
<td>Gb</td>
<td>A</td>
</tr>
<tr>
<td>S₉</td>
<td>Gb</td>
<td>G</td>
<td>Dₐ</td>
<td>B</td>
<td>C</td>
<td>Bb</td>
<td>E</td>
<td>D</td>
<td>Eₐ</td>
<td>F</td>
<td>A₀</td>
</tr>
</tbody>
</table>

You will note that the integers accompanying the “l” and “Rl” columns are the same in the absolute pitch method as they are in Lewin’s matrix. Using Lewin’s labeling will not always result in this phenomenon, however, and it is instead a coincidence that occurs with the specific tone row chosen for Moses und Aron.

Using Lewin’s approach to labeling provides an important advantage that makes it the more logical choice when discussing pieces in which inversional combinatoriality is a significant feature. In Schoenberg’s nomenclature, the rows that exhibit inversional combinatoriality (P₀ and l₃) have no apparent relationship to one another based solely on their labelling other than that which can be readily deduced by observing the beginning pitch class of each row. Explicitly, “l” indicates that the row contains inverted interval content from the prime row, and the integers indicate that “Cₚ,” which is the beginning pitch class of row l₃ is three semitones higher than “Aₚ,” which is the beginning pitch class of row P₀. By adopting Lewin’s notational methodology, we instantly add to the
knowledge we can obtain by simply looking at the set identification of tone rows themselves. In addition to the information we can gain from Schoenberg's nomenclature, another advantage to note is that inversive or retrograde inversion rows that share an integer with a prime or retrograde row, respectively, are invesionally combinatorial with each other. That is, I$_5$ is the inversionally combinatorial row to S$_5$, and RI$_7$ is the inversionally combinatorial row to R$_7$, and so on. For this reason, Lewin's model is used in my analysis from this point on.

I do make one exception with Lewin's terminology in the labeling of the ordinal content of each tone row. Both Lewin and Cherlin assign numerical labels from 1 to 12 to the pitch classes found in each row corresponding to the order in which they appear in the row. For example, in S$_0$ the pitch class "A$^m$" (the first pitch class in the row) would be labeled as "pitch class 1" of S$_0$. In this study, however, I label the ordinal content of the row by the more traditional method of integers from 0 to 11, which means that the pitch class "A$^m$" in S$_0$ is instead labeled as "pitch class 0" of the row. The reason for following this method of labeling ordinal content is consistency with the larger notational language. Tone row transformations are labeled from 0 to 11 (Ex. RI$_0$ and I$_{11}$), therefore it makes sense to label the pitch class content of each transformation using the same integers.
CHAPTER III
SYMMETRIC PARTITIONS

1. Partitions, Relationships, and Operations

I have already discussed in Chapter 2 the inherent properties of the tone row Schoenberg chose for Moses und Aron, the most important of which being hexachordal inversional combinatoriality. Having finished the overview of twelve-tone serialism in general, let us now turn our attention to the partitioning of the tone row of Moses und Aron. To begin his analysis of Moses und Aron, Cherlin develops a methodology for contextualizing and analyzing the partitions of the tone row found in the opera. I shall now examine at length the partitions that have been deemed by Cherlin as contributing significantly to the dramatic development as well as a comprehensive analysis of Moses und Aron.

Cherlin begins his discussion of these properties by defining three important terms that are used to describe and formalize his analytical techniques: Partitions, Relationships, and Operations. The vast majority of this chapter is devoted to examining the specific partitions found in Moses und Aron. Relationships and operations between the partitions are only discussed as needed in later sections in the context of the partitions that they affect. Through the discussion of combinatoriality I have already described the principle of partitioning as the process of segmenting a single, complete tone row into smaller fragments usually based on number of pitches (such as tetrachords and hexachords) or some other inherent relationship among the pitch classes. Though Cherlin presents his own working definition of “partitioning” pertaining specifically to his study, the functional application of his definition is essentially the same as mine. Cherlin states that a partition “groups certain ordered subsets of the row so that
in effect the whole [row] is articulated into modular components."¹ The term "component" in Cherlin's study refers to an ordered subset of any given partition.

Cherlin further clarifies his definition of partitioning by giving three necessary conditions that must be met in order for any division of a tone row to be classified as a partition:

1. A partition is exhaustive in the sense that the sum of its components contains all twelve [pitch classes].
2. A partition is nonrepetitive in that its components do not share any [pitch class] content with each other.
3. Given the ordered pair (x,y) in the row, a component of a partition, if it contains both “x” and “y,” will not place “y” before “x.” It is important to note that the ordered pair (x,y) does not necessarily comprise consecutive ordinal members of the row; the requirement is only that “x” appear before [or consecutively with] “y.”²

While conditions one and two above should be fairly easy to comprehend, an example of condition three may be seen in Example 3.1.

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² Ibid., 43.
In this example, both components of the partition contain pitch classes that are not consecutive in the original row. However, since the pitch classes are presented in each partition in the order that they appear in the original row, this example meets all three of Cherlin's conditions for partitioning. The partition in the Example 3.1 Cherlin has termed the "Even/Odd Partition."

It is worth noting at this point that partitions may be further subdivided into subpartitions. These subpartitions may not alter any of the conditions of the larger partition, while the subpartition must itself meet all three conditions of partitioning as well. This means, for example, that the first component of the Odd/Even Partition may be further partitioned into two trichords that may sound in succession or simultaneously, but must preserve the ordinal content of both the partition and the complete original row.

A large part of the work done by Cherlin in his dissertation is finding associations between these partitions (and subpartitions) and the dramatic or thematic elements, or even the characters themselves, of Moses und Aron. Cherlin provides a helpful table on
pages 46 and 47 of his dissertation outlining these partitions and the character or
dramatic events with which they are associated. I have reproduced this chart on the
following pages in Table 3.1 with some modifications and illustrations that help to
interpret its content. As a point of reference, $S_0$ in its complete and unaltered form is
presented first with each pitch class assigned a numerical value to indicate its ordinal
context within the row. In the following pages, I will examine each partition individually
with the provided table being a helpful point of reference for this discussion.
Table 3.1

<table>
<thead>
<tr>
<th>S₀ Prime Form</th>
<th>OC</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
</table>

Symmetric Partitions

<table>
<thead>
<tr>
<th>Partition Name</th>
<th>Dramatic Association</th>
<th>Ordinal Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Prophesy (HXCHD)</td>
<td>God's Prophesy to the chosen people</td>
<td>(0,1,2,3,4,5); (6,7,8,9,10,11)</td>
</tr>
<tr>
<td>a. Hexachord</td>
<td></td>
<td>(0,1); (2,3,4,5); (6,7,8,9); (10,11)</td>
</tr>
<tr>
<td>b. Dyad + Tetrachord</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Divine (X + Y)</td>
<td>Moses’ revelation at the burning bush</td>
<td>(0,1,2,9,10,11); (3,4,5,6,7,8)</td>
</tr>
<tr>
<td>a. X + Y</td>
<td></td>
<td>(0,1,2); (9,10,11); (3,4,5,6,7,8)</td>
</tr>
<tr>
<td>b. Xab + Y Subpartition</td>
<td></td>
<td>(0,1,2); (9,10,11); (3,4,5); (6,7,8)</td>
</tr>
<tr>
<td>c. Xab + Yab Subpartition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Miracle (CT)</td>
<td>The miracles of I.3 and the upheaval of II.3, leading to the creation of the Golden Calf</td>
<td>(0,1,10,11); (2,3,4,5); (6,7,8,9)</td>
</tr>
<tr>
<td>4. Moses (OT)</td>
<td>Moses</td>
<td>(0,1,2,3); (4,5,6,7); (8,9,10,11)</td>
</tr>
</tbody>
</table>
## Asymmetric Partitions

<table>
<thead>
<tr>
<th>Partition Name</th>
<th>Dramatic Association</th>
<th>Ordinal Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Deception</td>
<td>False hopes and fears</td>
<td>(0,1,5) and (6,8,9); (2,3,4) and (7,10,11)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(S or I transformations only)</td>
</tr>
<tr>
<td>2. Phantasy (E/O)</td>
<td>Aron's vision of God's relation to the Volk</td>
<td>(0,2,4,6,8,10); (1,3,5,7,9,11)</td>
</tr>
<tr>
<td>a. Even/Odd (E/O)</td>
<td></td>
<td>(0,2,4); (6,8,10); (1,3,5); (7,9,11)</td>
</tr>
<tr>
<td>b. Eab/Oab Subpartition</td>
<td></td>
<td>(S or I transformations only)</td>
</tr>
<tr>
<td>3. Mirage</td>
<td>The desert mirage</td>
<td>(0,1,3,6,8,11); (2,4,5,7,8,10)</td>
</tr>
<tr>
<td>4. Schlange</td>
<td>The miracle of the staff/snake</td>
<td>(0,4,5); (6,9,11); (1,2,3); (7,8,10)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(S or I transformations only)</td>
</tr>
<tr>
<td>5. Sacrifice (ALLRXa)</td>
<td>The virginal sacrifice</td>
<td>(0,1,5); (2,7,9); (3,4,8,); (6,10,11)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(I transformations only)</td>
</tr>
<tr>
<td>6. Bringt</td>
<td>The volatile nature of the Volk</td>
<td>(0,1,5,7,8,11); (2,3,4,6,9,10) and (0,1,2,7,9,11); (3,4,5,6,8,10)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(S and R) or (R and S) or (I and R) or (R and I)</td>
</tr>
</tbody>
</table>
In addition to the minor changes made to Cherlin's table of partitions, I have also separated the partitions into two distinct categories: symmetric and asymmetric. For the duration of this project, a symmetric partition shall be considered one in which the ordinal partition content is mirrored when the tone row is divided into two equal hexachords. As clarification, observe the differences between a symmetric partition and an asymmetric partition in Example 3.2.

**Example 3.2: Symmetric vs. Asymmetric Partitions**

S₀ Miracle Partition:

\[
\begin{array}{cccccccc}
0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 \\
8 & 9 & 10 & 11 & & & & \\
\end{array}
\]

S₀ Deception Partition:

Looking first at the symmetric Miracle Partition, the first hexachord contains an outer dyad and an inner tetrachord and is mirrored by the opposite hexachord. In contrast, the asymmetric Deception Partition shows no such mirroring of the hexachords.
2. The Prophesy Partition

Hexachord and Trichord Subpartition

Example 3.3: Prophesy Partition (Hexachords)

Now that the ordinal content of each partition has been established, we shall examine each partition individually in the context and setting in which it appears in the opera itself. As part of the examination of each partition, I also discuss the relevant relationships and operations specific to each partition.

The first such partition that I examine is the Prophesy Partition. The Prophesy Partition family is composed of three partitions and subpartitions: hexachords, trichords, and dyads + tetrachords. This specific partition is associated with the prophetic words of Yahweh to the chosen people of Israel and is used quite often throughout the course of the opera.

The first partition in the Prophesy Partition family divides the tone row by sequential six-note hexachords. As one of the defining characteristics of Schoenberg’s chosen tone row in Moses und Aron is hexachordal inversional combinatoriality, partition of individual rows by hexachord becomes an important thematic element. Additionally, rows partitioned as such by hexachord are often found paired with their inversionally combinatorial row. Cherlin terms this moving of pitch classes from any given hexachord

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3 Cherlin, The Formal and Dramatic Organization, 56.
to those in its inversionally combinatorial row a "combinatorial operation." In the context of Cherlin’s project (and the present one as well), an "operation" is simply an abstract concept that moves certain pitch classes from the order of one particular row form into another. In other words, an "operation" itself is not visible in the score, but merely the results of the operation may be observed. In the combinatorial operation, for instance, while the operation itself may not be seen, the operation results in the moving of a hexachord to its inversionally combinatorial counterpart: \( S_{an} \) to \( l_{an} \), \( l_{an} \) to \( S_{an} \), \( R_{an} \) to \( R_{lan} \), and \( R_{lan} \) to \( R_{an} \).

To better understand this concept, let us look at an example of the combinatorial operation in the context of Moses und Aron. One such example where Schoenberg associates the first hexachord of a prime form of the tone row (\( S_{an} \)) with the first hexachord of its inversionally combinatorial row (\( l_{an} \)) can be found in Act II, Scene 3 of the opera. In measure 828, the Hauptstimme, or primary melody line, and accompaniment appear as follows in Example 3.4:

Example 3.4

*Moses und Aron*: Act II, Scene 3 (m. 828)

---


5 Here, the lowercase “a” refers to the first hexachord of each given row transformation. The example is interchangeable with the second hexachord of each row, or “b”, as well. The subscript “n” refers to any given integer 0-11 indicating the transposition of a given row form. The operation works with any integer, provided the same integer is used in both transformations of the operation.
In this excerpt, the first six pitch classes (the first hexachord) of tone row transformation S₅ are presented in the melody of the *Hauptstimme*. In the accompaniment for this melodic line, the first hexachord of tone row transformation I₅ is given within the chord structure. The ordinal content of both row transformations may be seen in the Example 3.5:

**Example 3.5**

*Moses und Aron: Act II, Scene 3 (m. 828)*⁶

Even though no visible "operation" has taken place, the presentation of the first hexachord of S₅ with the presentation of the first hexachord of its inversionally combinatorial row (I₅) establishes the presence of the combinatorial operation. Inherent in the combinatorial operation is one very important property: the pitch class content of the combined hexachords always comprises a complete aggregate. An aggregate is simply a collection of all twelve pitch classes of the octave. Referring back to Example 3.5 above, the reader will note that all twelve pitch classes are present in the combined pitch class content of S₅ and I₅.

---

⁶ Unless otherwise indicated, analyses are my own from this point forward in the project.
While the above excerpt is used by Cherlin in his dissertation and presents an adequate illustration of the combinatorial operation associated with the Prophesy Partition, I believe a clearer instance of the operation may be seen elsewhere in the opera. The following excerpt in Example 3.6 is taken from Act I, Scene 1. The tone row transformations and ordinal content of the rows have been labeled for you.

Example 3.6

*Moses und Aron: Act I, Scene 1 (mm. 72-73)*

This example provides a better picture of the combinatorial operation of the Prophesy Partition for several reasons. First, the hexachords are much more clearly visible in that they are both presented sequentially in the melodic content of the choral lines. Second, rather than occurring simultaneously as in Cherlin's example above, the hexachords occur as temporal adjacencies, a characteristic that further contributes to the clarity of the example. Third, the example Cherlin gives in his dissertation includes an additional pitch class (an A) in the accompaniment that does not fit sequentially into the first hexachord of I₅. (Refer to Example 3.5.)

The excerpt I have chosen from *Moses und Aron* presents the ordinal content of the hexachords sequentially without superfluous pitch classes. In addition, the hexachords in my example are presented as complete partitions. In Cherlin's example
above, I₅ is presented vertically in chordal structures and divided into trichord subpartitions. Finally, the example I present is more clearly associated with the Prophesy Partition for one very obvious reason: the text. Cherlin’s example occurs in an instrumental section of the opera, while the excerpt I include occurs during a choral section. The text that accompanies the hexachords is clearly referencing the prophetic promise of Israel as the chosen people of God:

<table>
<thead>
<tr>
<th>Text</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dieses Volk ist ausgewählt</td>
<td>This nation is chosen</td>
</tr>
<tr>
<td>vor allen Völkern,</td>
<td>out of all nations,</td>
</tr>
<tr>
<td>das Volk des einzigen</td>
<td>to be the people</td>
</tr>
<tr>
<td>Gottes zu sein.</td>
<td>of the one God.</td>
</tr>
</tbody>
</table>

Dyad + Tetrachord

Example 3.7: Prophesy Partition (Dyad + Tetrachord)

S₀ Dyad + Tetrachord

A more intriguing operation that may be applied to the partition is found in examining the dyad + tetrachord permutation of the Prophesy Partition. As a reminder, the dyad + tetrachord partition segments of the tone row are illustrated in Example 3.7.

Rather than utilizing the combinatorial operation, as seen in Example 3.6 with the hexachordal partition, the dyad + tetrachord partition is associated with two operations that occur simultaneously as the row form transitions from one transformation to another.

7 Unless otherwise indicated, translations are my own from this point forward in the project.
These two simultaneous operations also relate different row forms than the combinatorial operation. While the combinatorial operation relates a given row form with its inversionally combinatorial row, the two operations of the dyad + tetrachord partition relate a given row form with the retrograde of its inversionally combinatorial row: $S_n$ to $R_l_n$, $R_l_n$ to $S_n$, $I_n$ to $R_n$, and $R_n$ to $I_n$. From what has been discussed about combinatoriality, we know that rather than the two associated tone row transformations producing an aggregate (as they did with the combinatorial operation), the operations associated with the dyad + tetrachord partition always result in the same six pitch classes being present in both hexachord transformations.

The first of the two operations that occurs as these rows transition acts upon the outer dyads of the two row forms involved in the transformation. Cherlin refers to this first operation as the BACH operation\(^8\) for a rather obvious reason. To illustrate, let us return to the non-transposed prime row form that Schoenberg chose for *Moses und Aron* ($S_0$), as well as the row transformation that would be associated with $S_0$ utilizing the BACH operation ($R_l_0$). These row form transformations are given in Example 3.8.

---

**Example 3.8: $S_0$ and $R_l_0$**

Examining the outer dyads of the two tone row transformations listed above, two very important characteristics become apparent. First, the outer dyads of both rows contain the pitch classes A, B♭, B, and C. While not terribly significant in English, in German the pitch class names would be A, B, H, and C. A simple rearranging of the pitch classes and we arrive at the BACH operation. The second rationale for the name of this operation is that though the ordinal content of the pitch classes of the inner tetrachords changes during the operation, the ordinal and pitch class content of the outer dyads remain constant.

For the second operation that occurs within the dyad + tetrachord partition, let us return to Example 3.8 where S₀ and Rₐ₀ are listed in their entirety and segmented into dyads and tetrachords. This second operation acts upon the inner tetrachords of the row transformations and is referred to as the POST-STOP or STOP-POST operation. To illustrate why this is so, I shall examine the pitch class content of the tetrachords referenced above. The first tetrachord in S₀ contains the sequential pitch classes E, D, E♭, and D♭. Coincidentally, the first tetrachord in Rₐ₀ contains the same pitch classes in a different sequential order. When examining the second tetrachord in each tone row transformation, we discover the same pitch class phenomenon. The rearranging of the ordinal pitch class content of the tetrachords moving from the "S" tone row transformation to the "R₁" tone row transformation mirrors the rearranging of the letters in the words "stop" and "post." Example 3.9 illustrates this truth.

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Example 3.9: STOP-POST Illustration

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Thus, the relationship between two tetrachords that are associated as such is termed a STOP-POST operation. Unlike the BACH operation relating dyads, the STOP-POST operation is directional. This simply means that while the BACH operation is the same moving from “S" row forms to "RI" row forms and vice versa, the STOP-POST operation only moves “S" forms to “RI" forms (and “I" forms to “R" forms), and the reverse operation (POST-STOP) moves "RI" forms to “S" forms (and “R" forms to “I" forms).

The dyad + tetrachord Prophesy Partition occurs in multiple places throughout the opera, but perhaps most significantly in the very first scene. The Prophesy Partitions given in Act I, Scene 1 from measure 71 and extending through measure 84 are noteworthy for a few reasons. First, this occurrence of the Prophesy Partition is the first such projection of the dyad + tetrachord subpartition. Second, the dramatic context in which this partition appears gives this music immense theatrical weight in the opera as it accompanies the Divine's promise to His chosen people. Finally, the music found in this passage of Act I, Scene 1 is entirely unique in that it is the only extended section of music that is repeated verbatim more than once in the opera. In fact, the partitions found in measures 71 through 84 are repeated a total of three times in Moses und Aron with the exact same pitch class content, though there are a number of registral shifts in the succeeding reappearances. The repeats occur in Act I, Scene 4 (mm. 896-912, 919-933), and Act II, Scene 5 (mm. 1083-1098).

Of the repeats of this material, the one that I examine is the second reappearance found in Act I, Scene 4 (mm. 898-911). This particular example is chosen because this iteration of the dyad + tetrachord partition is much more easily visible than the others. In this specific occurrence of the partition, the Hauptstimme occurs in a single voice as Aaron recounts the promises of God to the people of Israel. In all other
appearances of the partition, the *Hauptstimme* is segmented and dispersed among the choral counterpoint.

As was the case with the combinatorial operation applied to the hexachord partition, the libretto during these measures directly references the prophetic word of God choosing Israel as His chosen people:

<table>
<thead>
<tr>
<th>Text</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Er hat euch auserwählt</em>&lt;br&gt;vor allen Völkern,&lt;br&gt;das Volk des einzigen&lt;br&gt;Gotts zu sein,&lt;br&gt;ihm allein zu dienen&lt;br&gt;Keines andern Knecht!&lt;br<em>Ihr werdet frei sein</em>&lt;br<em>von Fron und Plage!</em>&lt;br<em>Das gelobt er euch:</em>&lt;br<em>Er wird euch führen in das Land</em>&lt;br<em>wo Milch und Honig fließt,</em>&lt;br<em>und ihr sollt genießen leiblich,</em>&lt;br<em>was euren Vätern</em>&lt;br<em>verheißen geistig.</em></td>
<td><em>He has chosen you above all people,</em>&lt;br&gt;<em>to be the people of the one God.</em>&lt;br&gt;<em>to serve Him alone in no other’s service!</em>&lt;br&gt;<em>You will be free from toil and plague!</em>&lt;br&gt;<em>He promised to you: He will guide you into the land where milk and honey flows,</em>&lt;br&gt;<em>and you shall enjoy physically what was promised to your fathers in spirit.</em></td>
</tr>
</tbody>
</table>

Example 3.10 reproduces the *Hauptstimme* sung by Aaron during this scene.

The labels for the tone row transformations as well as the ordinal content of each row transformation have been included:
Example 3.10

*Moses und Aron*: Act I, Scene 4 (mm. 898-911)

Now that we have seen the row partitioning in context, let us take a closer look at the operations that occur as the *Hauptstimme* progresses. Starting with measure 898, Aaron sings the first hexachord (here understood as a dyad + tetrachord) of row transformation $R_0$: $C, B, A^b, G^b, F$ and $G$. Through applying the BACH operation as well as the POST-STOP operation, we are given the pitch class content of the first hexachord of $I_0$ in measure 899: $C, B, F, G, G^b$, and $A^b$. This concept can be visualized more clearly by examining the two measures vertically as is shown in Example 3.11.
A similar scenario occurs in the following measures, however, this time the row transformations are $S_0$ and $R_{10}$. The BACH operation is clearly seen from measure 900 to measure 901 in that the starting two pitch classes, or dyad, of each measure (and therefore of both $S_0$ and $R_{10}$) are the same: A and $B^b$. The movement of the subsequent tetrachords in each measure is where this example differs from the one above. Rather than undergoing a POST-STOP operation, this time the tetrachords are enacted upon by the opposite: the STOP-POST operation as seen in Example 3.12.
Perhaps the most interesting thing about this example occurs as it continues into measures 902 and 903. In these following measures, with some creative rearranging we see the pitch class content of the missing hexachords of both $S_0$ and $R_{l_0}$ from Example 3.11. When combining measure 900 and 902, we are given a complete statement of $S_0$. $R_{l_0}$ is also stated in its entirety when combining measures 901 and 903. Combining these measures as described and arranging the resulting measures vertically as was done before in Example 3.11, we are able to see in Example 3.13 both the BACH operation and the POST-STOP operation interact with two complete tone row transformations.

**Example 3.13**

*Moses und Aron*: Act I, Scene 4 (mm. 900 and 902)

These two operations continue to convert tone row transformations through measure 911. Rather than discussing each of these conversions individually, I shall give a brief overview of each, and the reader may reference Example 3.14 to visualize the alterations. From measure 908 to 909, a BACH operation as well as a STOP-POST operation changes the second hexachord of $l_0$ in measure 908 to the second hexachord
of $R_0$ in measure 909. From 910 to 911, a POST-STOP operation and a BACH operation alter the ordinal content of the second hexachord of $Ri_3$ into the second hexachord of $S_0$.

**Example 3.14**

*Moses und Aron: Act I, Scene 4 (mm. 908-911)*

3. The Divine Partition

The second partition that I would like to examine in further detail is the Divine Partition, or the $X + Y$ Partition.\(^\text{10}\) This particular partition segments the rows into two outer trichords, referred to as $X_a$ and $X_b$, and one inner hexachord, referred to as $Y$. Hexachord $Y$ may also be subdivided into trichords $Y_a$ and $Y_b$. A realization of this partition of $S_0$ is shown in Example 3.15.

**Example 3.15: Divine Partition**

\(^{10}\) Cherlin, *The Formal and Dramatic Organization*, 65.
Before I begin discussing the presence of $X + Y$ in the context of *Moses und Aron*, let us first discuss the properties unique to each section of the partition, noting initially the middle hexachord, or $Y$ section, of the $X + Y$ partition. In order to accomplish this, I continue to refer to the row transformation $S_0$ in Example 3.15.

In examining the central hexachord of $S_0$ above, we find the pitch classes $D, E^b, D^b, G, F, and G^b$. To determine certain characteristic of this hexachord, I utilize two tools often used in atonal theory: **pitch class sets** and **interval class vectors**. As pitch class sets and interval class vectors are useful tools for examining characteristics of this and future partitions, it will be useful to have an introductory understanding of **pitch class set theory**. Important terms in pitch class set theory, such as **normal order** and **prime form**, have been defined for the reader in the Glossary. For further reading on this subject, I recommend reading the section on pitch class set theory in Allen Forte's *The Structure of Atonal Music*.

With a general understanding of the meaning of both pitch class sets and interval vectors, we are prepared to resume the discussion of the $X + Y$ partition. As previously stated, the pitch class content of the inner hexachord, or $Y$, of $S_0$, is $D, E^b, D^b, G, F, and G^b$. When converted into a pitch class set, these pitch classes are represented numerically as $(012456)$ with an interval vector of $[432321]$. While this information is helpful, a better understanding of the partition is gained through separating $Y$ into two trichord subpartitions of $Y_a (D, E^b, and D^b)$ and $Y_b (G, F, and G^b)$. When separated as such, both trichords are represented by the pitch class set $(012)$ with an interval vector of $[120000]$. This information gives us important insight into the character of the $Y$

---

11 When utilizing pitch class set theory, pitch classes shall be represented numerically as our primary goal is to determine general characteristics of a given pitch class set rather than a group of specific pitch classes. When transferring this knowledge back to discussing specific examples in *Moses und Aron*, the relevant pitch classes shall again be referred to by name.
hexachord. The chromatic nature of the pitch classes in these trichords is crucial to Schoenberg's use of the X + Y partition. Before delving into that topic, however, let us first contrast the Y hexachord with the outer X trichords.

The X trichords of the Divine Partition are extremely different in character from the Y hexachord. Referencing Example 3.15, we see $X_a^s$ of $S_0$ contains pitch classes A, $B^b$, and E and $X_b$ contains pitch classes $A^b$, B, and C. Referring back to the techniques used above, I once again use pitch class sets and interval vectors to determine crucial characteristics inherent in these trichords. The pitch class set of $X_a^s$ is (016) which produces the interval vector of [100011], and similarly the pitch class set of $X_b$ is (014) which produces the interval vector of [101100]. While these two trichords are not identical, they share characteristics that differentiate them from the Y trichords. Both X trichords have potential to be used for spacious quartal/quintal chord structures; a quality not shared by the inherently chromatic Y trichords. With these characteristics in mind, let us examine how the X + Y partition is used in the context of Moses und Aron.

As the opera begins in Scene 1 with the calling of Moses by God at the burning bush, it is fitting that the opening measures of Moses und Aron are musically characterized by the X + Y partition that represents the Divine. As with the combinatorial operation of the Prophesy Partition, the tone rows partitioned by the Divine Partition are often found with their inversionally combinatorial row. The first measures of the opera are no exception. The choral counterpoint of measures 1 through 3 of Act I is reproduced in Example 3.16 with tone row transformations and ordinal content labeled.
The first thing to notice about these measures is that the choral lines contain only the X portions of tone rows S₀ and I₀. This seemingly inconsequential detail reveals much about the dramatic context of the opera and Schoenberg's own theological views. As Scene 1 progresses, it becomes evident that this choral line represents the voice of God. The choral text in measures 11 through 15 confirms this:

**Text**

Lege die Schuhe ab.
Bist weit genug gegangen.
Du stehst auf heiligen Boden.
Nun verkünde!

**Translation**

Discard your shoes.
You have gone far enough.
You are standing on holy ground.
Now preach!
Throughout this passage of text, the choral lines continue to contain only the pitch classes of the outer X trichords of $S_0$ and $I_0$. (See Example 3.17.) Schoenberg scores the voice of God using only these outer trichords for important reasons. The outer trichords contain wider intervals that (in Western musical convention) sound much more pleasant when presented vertically than the chromatic Y hexachord. The minor seconds in both outer trichords are even written instead as major sevenths. This choral line also contains long note values in a homophonic texture. This specific presentation of the X trichords indicates a deep reverence and respect for the voice and character of God. These examples of the Divine Partition (3.16 and 3.17) also represent the first instance of functional orchestration both in the opera itself and in this discussion of the partitions. Rather than the ordinal content of the tone row being listed sequentially in each choral part, adjacencies within the tone rows are orchestrated vertically among the choral lines. The ordinal content of each row is also represented in Examples 3.17 and indicated by the numerical values above or below each pitch class.
Example 3.17

*Moses und Aron: Act I, Scene 1 (mm. 11-15)*

This association of the X trichords with the voice of God is utilized throughout *Moses und Aron* and can be seen again in measures 36 through 40 of Scene 1 with $S_7$ and $i_7$, measures 87 through 93 of Scene 1 with $R_5$ and $R_{15}$, and numerous other places.

In stark contrast to the sustained, wide chords that give voice to God in *Moses und Aron*, Schoenberg often uses the Y hexachord as the musical setting for Moses and Aaron as they reference the Almighty. One particularly noteworthy example of this is found in Act I, Scene 2. Aaron’s vocal line is reproduced in Example 3.18 with tone row transformations and ordinal content labeled.
In this excerpt, Aaron and Moses are discussing the character of God. The text presented by Aaron is the following.

**Text**
*Unsichtbar! Unvorstellbar!*
*Volk, auserwählt dem Einzigen,*
*kannst du lieben*
*was du dir nicht vorstellen darfst?*
*Unvorstellbarer Gott.*

**Translation**
*Invisible! Inconceivable!*
*People, chosen by the only One,*
*Can you love*
*what you cannot imagine?*
*Unimaginable God.*

Setting this text with the chromatic and biting musical backdrop of the Y hexachord has a profound impact on the characterization of Moses and Aaron. Though it is clear that both characters have a reverence and awe for God in this narrative, the chromaticism of the vocal lines reveals their flawed humanity. Though they try, neither their voices nor their actions will ever truly mirror the purity and righteousness of the Almighty God.

There are numerous relationships and operations that take place involving the Divine Partition throughout the entirety of *Moses und Aron.* They are so prevalent, in fact, that Cherlin devotes an entire 33 pages of his dissertation to discussing only these
relationships and operations. In the context of this project, however, I have covered all necessary material and shall move on to the Miracle Partition.

4. The Miracle Partition

The third partition that has a significant dramatic association in Moses und Aron is the Miracle Partition.\(^{12}\) This partition divides the tone row into three groups of chromatic tetrachords, and may therefore be referred to as the chromatic tetrachord partition. Example 3.19 shows the Miracle Partition using S\(_0\) as a reference.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{example3_19.png}
\caption{Miracle Partition}
\end{figure}

Example 3.19: Miracle Partition

Before examining examples of the chromatic tetrachord partition in the context of the opera itself, let us familiarize ourselves with the properties of each section of the partition. As implied by the name of the partition, all three tetrachords are composed of four chromatic pitch classes represented by the pitch class set (0123). As a result, all three tetrachords have an interval vector of [321000]. The presence of so many chromatic intervals in this partition makes it similar in character to the Y hexachord of the Divine Partition. This partition is primarily used in Act 1, Scene 4 when Moses and Aaron are performing miracles before Pharaoh in Egypt.

The first example of the Miracle Partition I present is found in measures 654 through 661 of Act I, Scene 4. In this excerpt, Moses and Aaron stand before the people

\(^{12}\) Cherlin, The Formal and Dramatic Organization, 71.
of Israel to convince them that the Almighty has sent them. Though it does not happen this way in the Biblical narrative of Exodus, Aaron grabs hold of Moses' staff and throws it to the ground where it becomes a serpent. The chromatic tetrachords begin in measure 654 as Aaron explains the miracle to the people through the singing of the following text:

<table>
<thead>
<tr>
<th>Text</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>In Moses' Hand ein starrer Stab:</em></td>
<td>In Moses' hand a rigid rod:</td>
</tr>
<tr>
<td><em>Das Gesetz.</em></td>
<td>This, the law.</td>
</tr>
<tr>
<td><em>In meiner Hand</em></td>
<td>In my hand</td>
</tr>
<tr>
<td><em>die bewegliche Schlange:</em></td>
<td>the moving snake:</td>
</tr>
<tr>
<td><em>die Klugheit.</em></td>
<td>wisdom.</td>
</tr>
</tbody>
</table>

As the chromatic tetrachords of the Miracle Partition are dispersed among Aaron's vocal line and the instrumental accompaniment, and are therefore difficult to locate, several steps are taken to examine this passage. A reproduction of the measures as they appear in the score (with the orchestration in a piano reduction) is provided in Example 3.20.
Before discussing the tone row transformations present in this excerpt, let us first discuss some of its musical properties. Immediately noticeable is the division of both the vocal line and the piano reduction into dyads. Throughout the excerpt, pitch classes seemed to be grouped together horizontally in pairs. There are also natural breaks in the accompaniment at the end of each measure from measure 654 through measure 656 and every two measures beyond that. It is safe to assume, then, that the tone row transformations appear in their entirety within one measure in each of the first three measures and within two measures in the second half of the excerpt.
Determining which tone row transformations are present in each measure, however, brings to light a special property of the chromatic tetrachord partition. To illustrate this, Example 3.21 shows $S_4$ and $I_4$ divided into their respective chromatic tetrachords.

**Example 3.21: Prime vs. Inversion Miracle Partition**

<table>
<thead>
<tr>
<th>$S_4$ Miracle Partition</th>
<th>$I_4$ Miracle Partition</th>
</tr>
</thead>
<tbody>
<tr>
<td>OC = 0 1 2 3 4 5 6 7 8 9 10 11</td>
<td>OC = 0 1 2 3 4 5 6 7 8 9 10 11</td>
</tr>
</tbody>
</table>

As demonstrated in this example, the chromatic tetrachords of any given transformation of Schoenberg's tone row contain the same pitch classes as the chromatic tetrachords of its hexachordally inversionally combinatorial row.\(^{13}\) In order to determine the transformations present in each measure, then, one must look specifically at the order of the dyads in this example. In Example 3.22, measures 654 through 656 are listed again with the tone row transformations labeled. Referencing the twelve-tone matrix used in this project (found in Appendix III) is recommended while examining this example.

\(^{13}\) As the chromatic tetrachord partition utilizes the outer dyads of a tone row transformation as one of the tetrachords, one must also examine the order of the pitch classes to determine whether the row is prime or retrograde.
The second example of the Miracle Partition examined occurs during the third miracle performed in Act I, Scene 4. The excerpt in Example 3.23 reproduces measures 870 through 873. In this entirely instrumental example, the music represents the transformation of water to blood. Once again, the piano reduction of the score is used to better visualize the tetrachords present in these measures. As with the previous example, determining the exact tone row transformation in each measure is difficult; however, through careful examination we can conclude that the three measures contain three full statements of S₄. In Example 3.23, I have also condensed the piano reduction onto one staff and normalized the octave placement of the pitch classes to better identify the tone row transformations.
One interesting thing to note about this passage is that the third measure of the excerpt is one dyad short of being a complete statement of $S_4$. It is missing the pitch classes G and Ab. These missing pitch classes are found on beat three of the first measure of the example. In this first statement of $S_4$, the pitch classes G and Ab appear twice: once on beat three of measure 870 and once on the "and" of beat one in measure 871. The second statement of these pitch classes is the one associated with the first statement of $S_4$ as it occurs within the same beat as the two pitch classes that complete their chromatic tetrachord (F and Gb). This leaves the first statement of G and Ab unassociated with any larger structure until the final measure of this instrumental section.

5. The Moses Partition

The fourth and final example of a symmetric partition in Moses und Aron is the Moses Partition.\textsuperscript{14} Like the Miracle Partition discussed in the previous section, the Moses Partition segments the row into tetrachords. These tetrachords, however, are based on the ordinal content of the row rather than chromaticism. Therefore, the Moses Partition

\textsuperscript{14} Cherlin, The Formal and Dramatic Organization, 116.
may also be referred to as the ordinal tetrachord partition. $S_0$ segmented into ordinal
tetrachords may be observed in Example 3.24.

**Example 3.24: Moses Partition**

<table>
<thead>
<tr>
<th>S₀ Moses Partition</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Moses Partition" /></td>
</tr>
<tr>
<td>OC = 0 1 2 3 4 5 6 7 8 9 10 11</td>
</tr>
</tbody>
</table>

In contrast to the chromatic tetrachord partition, the ordinal tetrachord partition is
used infrequently in the opera. While the Miracle Partition contains three tetrachords with
the same pitch class set and interval vector, the Moses Partition contains three
tetrachords with entirely different pitch class sets and interval vectors and very few
similarities. The first example of the Moses Partition in the opera occurs in measures 8
through 10 in the first scene of Act I. This the most significant iteration of the ordinal
tetrachord partition as it is the first time Moses speaks in the opera. As such, this
passage associates the ordinal tetrachord partition with the character of Moses.

Example 3.25 reproduces measures 8 through 10 with row transformations $S_{10}$ and $R_{11}$
as well as their ordinal content labeled.

**Example 3.25**

*Moses und Aron: Act I, Scene 1 (mm. 8-10)*

<table>
<thead>
<tr>
<th><img src="image" alt="Example 3.25" /></th>
<th>(0,1,2,3) (4,5,6,7) (8,9,10,11)</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Example 3.25" /></td>
<td>(0,1,2,3) (4,5,6,7) (8,9,10,11)</td>
</tr>
</tbody>
</table>
Another interesting appearance of the ordinal tetrachord partition occurs in
Scene 3 of Act I. In measures 296 through 301 the alto line in context of the choral
voices represents the people of Israel as they voice their concerns about following
Moses out of Egypt.

Text
Er flüchtete!
Uns ereilte die Rache Pharaos!
Kommt er wieder,
Aufruhr zu stiften?

Translation
He fled!
We suffered the vengeance of Pharaoh!
He comes back,
Will he stir rebellion?

While the altos sing this text referencing Moses, the other choral voices add
punctuation to the statements by interrupting with loud, indignant statements of “Moses!”

Referencing Example 3.26, we see the altos begin in measure 296 with a complete
statement of row transformation RI₂, though the initial tetrachord is separated from the
rest of the row. On beat seven of measure 298, the altos begin a subsequent statement
of row transformation S₂. The row is interrupted again after the first tetrachord sounds,
however this time the interruption is filled with the multitude of the people of Israel crying
“Moses!”

Example 3.26

*Moses und Aron*: Act I, Scene 3 (mm. 296-301)
CHAPTER IV

ASYMMETRIC PARTITIONS

In the present chapter, we will continue to examine the tone row partitions present in *Moses und Aron* highlighted by Cherlin in his dissertation. The partitions presented in this chapter, I have classified as Asymmetric Partitions. The reader will remember from the previous chapter that a symmetric partition is one in which the ordinal partition content is mirrored when the tone row is divided into two equal hexachords. As clarification, the differences between the symmetric Miracle Partition and the asymmetric Deception Partition may be observed in Example 3.2.

1. The Deception Partition

The first asymmetric partition that has significant dramatic association within *Moses und Aron* is the Deception Partition.¹ The Deception Partition, similar to the Moses Partition in the previous chapter, is used quite sparingly throughout *Moses und Aron*, although it definitely has one of the most interesting functions. Like the Prophesy and Divine Partitions, the Deception Partition segments a tone row transformation into trichords. Unlike previous partitions, however, the Deception Partition is the first we have discussed that segments the tone row in an asymmetric fashion. The Deception Partition also has a unique property that relates the partitioned row transformation with the retrograde of the inversionally combinatorial row. As a visualization of this principle, Example 4.1 shows row transformation $S_0$ with $Rl_0$, the row transformation that is the retrograde of the inversionally combinatorial transformation $l_0$.

Example 4.1 displays the relationship between $S_0$ and $R_l_0$. This association will be referred to as the deceptive relationship. One of the clearest presentations of this deceptive relationship occurs in the second scene of Act II. In this scene, Aaron and the people of Israel are concerned God has killed Moses on Mount Sinai as he has been away from the people for such a great period of time. Our excerpt comes from measures 151 through 154 when the people have fully bought into this deception. The choir, again representing Israel, is given the following text:

**Text**

*Die Götter haben ihn getötet!*
*Die starken Götter*
*vernichten den Frevler!*

**Translation**

*The gods have killed him!*
*The strong gods*
*destroy the wicked!*

As a reference for this discussion, measures 151 through 154 are reproduced in Example 4.2 with row transformations labeled. Along with the excerpt from the score, row transformations $R_l_9$, $S_9$, $R_9$, and $I_9$ are given as well.
Example 4.2

*Moses und Aron: Act II, Scene 2 (mm. 151-154)*

There are two significant things to point out about this example. First, it seems logical to name the first tone row transformation that appears in these measures $S_9$, as
the first three pitch classes in the tenor line are also the first three pitch classes in $S_9$ ($G^b$, $G$, and $D^b$). However, through examining the functional orchestration present in these measures, we see that the third pitch class of the first trichord is actually the $B^b$ that sounds in the bass line. This means that temporally the correct first trichord contains the pitch classes $G^b$, $G$, and $B^b$, or the first pitch classes in row transformation $R_l$. The correct labeling of these measures as $R_l$ rather than $S_9$ is confirmed by the presence of a complete and unaltered statement of $R_l$ in the bass voice in the measures immediately following. As the name of the partition implies, the initial trichord deceives the theorist into analyzing the wrong row transformation. This happens again in the second part of Example 4.2 with row transformations $R_9$ and $I_9$.

The observant reader may have already discerned the second important deception in Example 4.2. In the partition table given in the previous chapter and the beginning of this section, I have listed the ordinal content of the first trichord in the Deception Partition as $(0,1,5)$. In Example 4.2, however, the ordinal content of the first trichord is clearly $(0,1,4)$. This phenomenon is the result of the Deception Partition being asymmetric. Let's examine the Deception Partition again, this time looking at $S_0$ and $R_9$ in Example 4.3.

**Example 4.3:** $S_0$ and $R_9$ Deception Partitions

$S_0$ Deception Partition

<table>
<thead>
<tr>
<th>OC</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
</table>

| OC | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |

$R_9$ Deception Partition
Examining the Deception Partition applied to both a prime and retrograde transformation reveals a noteworthy property of many asymmetric partitions. The retrograde (and retrograde inversion) transformations of the Deception Partition will have different ordinal content than the prime or inversion transformations. The first trichord in $S_0$, as can be observed in Example 4.3, contains the ordinal content $(0, 1, 5)$, while the primary trichord in $R_0$ contains the ordinal content $(0, 1, 4)$. This property is shared by many (but not all) of the asymmetric partitions.

2. The Phantasy Partition

The next asymmetric partition we will examine in our study is the Phantasy Partition that is used in association with Aaron's idea of God's relationship to the people of Israel. As the Phantasy Partition segments row transformations based on whether the numerical value representing any given pitch class is odd or even, the Phantasy Partition may also be referred to as the even/odd partition. Example 4.4 shows $S_0$ segmented into the Phantasy Partition hexachords.

Example 4.4: Phantasy Partition

Like many of the partitions we have already covered, this specific partition does not occur often in opera. The first use of the Phantasy Partition, however, sees both the hexachords of the even/odd partition subdivided into trichords. In fact, many of the uses of the Phantasy Partition in Moses und Aron appear subdivided in this fashion. Before

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2 Cherlin, The Formal and Dramatic Organization, 93.
we examine the first appearance of the Phantasy Partition, let us consider the trichord subpartitions of $I_4$ in Example 4.5.

**Example 4.5: Phantasy Subpartition**

$I_4$ Phantasy Subpartition

The first appearance of the even/odd partition in the opera subdivides $I_4$ into trichords and occurs in the second scene of Act I. This appearance serves as the musical backdrop to the introduction of the character of Aaron. This musical setting of Aaron’s introduction develops a strong association of the Phantasy Partition with Aaron’s delusions about God that arise often throughout the opera. This first example, however, is rather succinct. Example 4.6 reproduces the instrumental lines from measures 123 and 124.

**Example 4.6**

*Moses und Aron*: Act I, Scene 2 (mm. 123-124)

In this example, we see only the first trichord of both the odd and even subpartitions of $I_4$ presented in the orchestration. Though it is a short and incomplete iteration of the Phantasy Partition, this statement of the partitioned $I_4$ carries with it the heavy weight of dramatic association that plays out later in the opera.
This dramatic association is strengthened later in the same scene of Act I.

Example 4.7 gives Aaron's vocal line for measures 163 through 176. The instrumental accompaniment for this extended excerpt has been reproduced as a piano reduction for a better visualization of the trichords. Instrumental lines that do not factor into the Prophesy Partition have also been removed to avoid confusion.
In this powerful example, Aaron expresses his delusions, or phantasies, of how
the people of Israel will respond favorably to the God who calls them out of their captivity
in Egypt. The text from this section of the opera is given below.

Text
Auserwähltes Volk,
einen einzigen Gott
ewig zu lieben mit
tausendmal mehr der Liebe,
mit der alle andern Völker
ihre vielen Götter lieben.

Translation
Chosen people,
one and only God
eternally to love with
a thousand times more love,
than all other nations
love their many gods.

In contrast to the first example of the Phantasy Partition we examined, this
excerpt provides six complete even/odd hexachord partitions that relate to one another
in pairs. Measures 163 through 164.1 present the even hexachord of $S_7$ in Aaron’s vocal
line. The odd pitch classes of $S_7$ are presented as trichords in the instrumental
accompaniment. The following measures, 164.4 through 166.1, partition row
transformation $R_l_7$ in a similar fashion. These two row transformations ($S_7$ and $R_l_7$) are
related in that $R_l_7$ is the retrograde of the hexachordally inversionally combinatorial
transformation of $S_7$.

The subsequent measures give us two more row transformation pairings
partitioned in the same fashion: one hexachord in Aaron’s vocal line and the other in
trichords in the accompaniment. Measures 166.4 through 170.3 give us two adjacent
statement of row transformation $I_7$. In the first statement, Aaron is given the even
hexachord with the odd hexachord in the accompaniment, however the orchestration of
the hexachords are reversed in the second. Finally, measures 170.5 through 172.3 give
us a presentation of the Phantasy Partition of $R_7$ paired with its inversionally
combinatorial transformation, $R_l_7$, in measures 172.5 through 176.
3. The Mirage Partition

Beginning in Act I, Scene 3, Schoenberg introduces a new partition into Moses und Aron that is associated with the people of Israel witnessing a mirage of Moses and Aaron walking towards them through the desert. This Mirage Partition, like the others presented in this chapter, is asymmetric. As \( l_0 \) is the first row transformation to be segmented by the Mirage Partition in the opera, Example 4.8 shows row transformation \( l_0 \) segmented into the Mirage Partition trichords.

\[
\begin{align*}
\text{Example 4.8: Mirage Partition} \\
\text{l}_0 \text{ Mirage Partition} \\
\text{OC} & = \begin{array}{cccccccccccc}
0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 10 & 11 \\
\end{array} \\
\text{\begin{music}
\n\end{music}} \\
\end{align*}
\]

The first appearance of the Mirage Partition occurs in measures 399 through 402 in the context of the choral counterpoint. The Mirage Partition in measures 399 and 400 is reproduced in Example 4.9. These first two measures of this section present a statement of \( l_0 \) in the alto and bass voices.

\[\text{Cherlin, The Formal and Dramatic Organization, 104.}\]
The truly interesting part of this scene, however, is found in measures 401 through 402. These measures contain two simultaneous statement of the Mirage Partition. While the soprano and tenor counterpoint combines into the Mirage Partition of row transformation \( S_3 \), the alto and bass voices present the Mirage Partition of row transformation \( I_3 \). By now, the reader will recognize these row transformations to be hexachordally inversionally combinatorial. This combinatoriality gives these two measures a very interesting property that is visualized in Example 4.10. As is fairly obvious by the fact that two complete tone rows are present in these measures, two aggregates are formed horizontally. The first is formed by combining the soprano and tenor hexachords \( S_3 \), and the second is formed by combining the alto and bass hexachords \( I_3 \). Not as readily apparent, however, are the aggregates formed vertically. Because these two row transformations are hexachordally inversionally combinatorial, two aggregates may also be formed by the first trichord of each choral line and the second trichord of each choral line. This is a property that will be further discussed in the next chapter relating to the Zwischenspiel Partition.
Example 4.10

*Moses und Aron*: Act I, Scene 3 (mm. 401-402)

This same phenomenon may be observed three contiguous times in the second occurrence of the Mirage Partition. The excerpt listed in Example 4.11 is taken from measures 411 through 418 of Act I. Similarly to the previous example, the three repetitions of the Mirage Partition occur in the context of choral counterpoint. The first statement occurs in measures 411 through 413 with the female voices presenting the Mirage Partition of $S_9$ and the male voices the partition of $I_6$. The second pair of partitions appears in measures 414 and 415 with $S_9$ in the alto and bass voices and $I_6$ in the soprano and tenor voices. The final pair is in measures 417 and 418 with $S_9$ in the soprano and tenor voices and $I_6$ in the alto and bass voices. As with Example 4.10, four aggregates are formed by each pair of partitions: two in horizontal hexachords and two in vertical trichords.
Example 4.11

*Moses und Aron*: Act I, Scene 3 (mm. 411-418)
4. The Schlange Partition

The Schlange Partition,\textsuperscript{4} or Snake Partition, first occurs in measures 647 and 648 of Act I and is explicitly associated with the miracle that transforms Moses’ rod into a snake. The text during this excerpt instantly creates this dramatic association:

\begin{align*}
\text{Text} & \quad \text{Translation} \\
\text{Flieht! Die Schlange wächst!} & \quad \text{Flee! The snake is growing!} \\
\text{Sie dreht sich, sie dreht sich!} & \quad \text{It twists, it twists!}
\end{align*}

The Schlange Partition first appears in the opera segmenting row transformation $I_3$. Example 4.12 shows $I_3$ segmented into the trichords of this partition.

\begin{example}
Schlange Partition
\end{example}

$l_3$ Schlange Partition

\begin{align*}
\text{OC} & = 0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad 7 \quad 8 \quad 9 \quad 10 \quad 11 \\
\begin{array}{cccccccccccc}
\text{\textcopyright} & \text{\textcopyright} & \text{\textcopyright} & \text{\textcopyright} & \text{\textcopyright} & \text{\textcopyright} & \text{\textcopyright} & \text{\textcopyright} & \text{\textcopyright} & \text{\textcopyright} & \text{\textcopyright} \\
\text{\textcopyright} & \text{\textcopyright} & \text{\textcopyright} & \text{\textcopyright} & \text{\textcopyright} & \text{\textcopyright} & \text{\textcopyright} & \text{\textcopyright} & \text{\textcopyright} & \text{\textcopyright} & \text{\textcopyright} \\
\end{array}
\end{align*}

Important characteristics of the trichords of the first hexachord of the Schlange Partition may be obtained through determining the pitch class sets and interval class vectors of the trichords. As is shown in Example 4.13, both trichords of the initial hexachord are represented by the same pitch class set and interval class vector.

\begin{example}
Schlange Partition PC Sets and Interval Vectors
\end{example}

\begin{align*}
& (026) \\
& [010101] \\
& (026) \\
& [010101] \\
& (015) \\
& [100110] \\
& (016) \\
& [100011]
\end{align*}

\footnote{Cherlin, The Formal and Dramatic Organization, 112.}
Measure 647 of Act I begins with the *Schlange* Partition appearing in hexachords in the soprano and tenor voices of the choral counterpoint. Example 4.14 presents a reproduction of the pitch class content of these measures for reference. After this initial statement of the *Schlange* Partition in the soprano and tenor hexachords, $I_3$ is again presented in *Schlange* Partition trichords dispersed among all four choral parts in measure 648.

Example 4.14

*Moses und Aron*: Act I, Scene 4 (mm. 647-648)

A second example of the *Schlange* Partition in *Moses und Aron* is found just a few measures later. This example is unique, however, in that it does not present a complete statement of either tone row transformation used in the partition. As seen in Example 4.15, the soprano and tenor voices of the choir each present the trichords in the first hexachord of the *Schlange* Partition of $S_6$. The alto and bass counterpoint adds
the trichords in the first hexachord of the Schlange Partition of the inversionally
combinatorial $I_6$. Thus, two vertical aggregates are formed by the vertical trichords.

Example 4.15

*Moses und Aron*: Act I, Scene 4 (mm. 651-652)

5. The Sacrifice Partition

The Sacrifice Partition, as presented by Cherlin in his dissertation, is problematic
for several reasons. First, the Sacrifice Partition only appears in the $I_6$ row
transformation. Second, Cherlin refers to this partition in his dissertation as the ALLRXa
Partition, which simply means that all trichords in this partition also form the first trichord
(Xa) of a retrograde row transformation. To illustrate this, Example 4.16 presents the
Sacrifice Partition of $I_6$ with the first trichord of $R_6$, $R_{11}$, and $R_1$.

---

Example 4.16: Sacrifice Partition and Retrograde Trichords

16

Sacrifice Partition

OC = 0 1 2 3 4 5 6 7 8 9 10 11

You will notice that though Cherlin refers to this partition as the ALLRXa Partition, I have only listed three retrograde row transformations. This is because last trichord in the Sacrifice partition represents pitch class set (013), while the other trichords (and all first trichords in retrograde transformations) represent pitch class set (014). This means that the Sacrifice Partition is not in fact an ALLRXa Partition.

Finally, this partition is a bit problematic in that it does not appear in its entirety until Scene 3 of Act II. There are several presentations of fragments of the Sacrifice Partition that may be understood as "foreshadowing" the eventual complete statement. However, the listener must already be aware of the existence of the Sacrifice Partition to hear these fragments as foreshadowing rather than simply segments of retrograde transformations.

The Sacrifice Partition is strongly associated with the sacrifice of the four virgins in worship to the golden calf that occurs in measure 811 through 823 of the second Act, and the fragmented partial statements that occur earlier are meant to foreshadow this event. The first and only such instance of foreshadowing that we will discuss occurs in Act I, Scene 3, measures 347 through 365. In this scene, the Priest is telling the people of Israel that there are many gods that must be appeased:
Es gibt Götter,
die nur strafen und solche
die nur belohnen.
Manche muß man öfter versöhnen,
andre kann man sich
dauernd gewinnen.

Translation
There are gods,
who only punish and those
who only reward.
Some must often be appeased,
others you can
permanently win over.

While the Priest is singing this line, the choral voices representing the people of
Israel punctuate the Priest's solo with regular statements of "Blutopfer!" or "Blood
sacrifice!" The Sacrifice Partition occurs both in these choral interjections and in the
instrumental accompaniment. Example 4.17 lists the choral line and relevant piano
reduction of the accompaniment from measures 359 through 363.

Example 4.17

Moses und Aron: Act I, Scene 3 (mm. 359-363)

In this example, we see only the second of the trichords in the Sacrifice Partition
of I₆, which could also be understood as the first trichord of row transformation R₁₁. It is
due to the strong dramatic association with the sacrificial language in this passage that
these trichords are understood as part of the Sacrifice Partition of I_6 rather than merely segmented portions of R_{11}.

The examples of foreshadowing come to their fruition in Scene 3 of Act II. In the midst of worship to the golden calf, four virgins sing of their willingness to be offered as sacrifices to the false god in a haunting, homophonic quartet. Immediately following the quartet, full statements of the Sacrifice Partition may be heard in the instrumental accompaniment as the virgins ready themselves for the ceremony. The clearest example of this is found in measure 817, which is provided in Example 4.18. The accompaniment has been simplified to aid comprehension.

**Example 4.18**

*Moses und Aron: Act II, Scene 3 (m. 817)*

6. The *Bringt* Partition

The final asymmetric partition in our study, the *Bringt* Partition, is associated with the volatile nature of the people of Israel. This partition is unique among the partitions we have discussed in that it actually represents two separate partitions always applied in a pair. Therefore, every statement of the *Bringt* Partition will have an

---

antecedent and consequent partition. Example 4.19 shows the antecedent Bringt Partition applied to I₂ and the consequent Bringt Partition applied to R₂.

Example 4.19: Bringt Partitions

I₂ Antecedent Bringt Partition

The most prominent example of the Bringt Partition occurs in the opening measures of Act I, Scene 4. In this scene, the choral voices again represent the people of Israel as they question Moses and Aaron. The following text comes from measures 443 through 457:

Text
Bringt ihr Erhöhung Botschaft
des neuen Gottes?
Schickt er als Führer euch uns
zu neuer Hoffnung?
Gern wollen wir ihm Geld,
Gut und Leben opfern!

Translation
Bring you good tidings
of the new God?
He sends you to lead us
and make us hopeful?
We are glad to give him gold,
goods and live offerings!

The choral counterpoint in these measures present three successive statements of the antecedent + consequent Bringt Partition. We can see in Example 4.20 that the Bringt Partition first appears in the soprano and alto voices and moves through I₂ and R₂ in measures 443 through 447. In measures 448 through 452, the tenor and bass voices pick up the partition and apply it to S₂ and Rl₂. The excerpt concludes with the partition
again being applied to $R_2$ and $I_2$ in the soprano and bass voices from measures 453 through 457.
Example 4.20

*Moses und Aron: Act I, Scene 4 (mm. 443-457)*
The *Bringt* Partition reappears later in Scene 4 as well. Ironically, in the statements of the *Bringt* Partition that occur in measures 566 and following, the people of Israel are expressing their displeasure with Moses' "new god" that they were so eager to praise in Example 4.20. The text from measures 566 to 582 indicate a great displeasure with the god Moses is preaching about:

<table>
<thead>
<tr>
<th>Text</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Bleib uns fern mit deinem Gott,</em></td>
<td><em>Stay away from us with thy God,</em></td>
</tr>
<tr>
<td><em>mit dem Allmächtigen!</em></td>
<td><em>with the Almighty!</em></td>
</tr>
</tbody>
</table>
In my study of the tone row partitions present in *Moses und Aron*, I have come across two specific partitions that have not been mentioned in any scholarly source I have yet examined. The present chapter will examine these two partitions along with their associated operations and dramatic associations. I have provided these partitions and their ordinal content in Table 5.1 on the following page.
Table 5.1

<table>
<thead>
<tr>
<th>$S_0$ Prime Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>OC = 0 1 2 3 4 5 6 7 8 9 10 11</td>
</tr>
</tbody>
</table>

### Additional Partitions

<table>
<thead>
<tr>
<th>Partition Name</th>
<th>Dramatic Association</th>
<th>Ordinal Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <em>Volk</em> (AT)</td>
<td>The transition of the Volk</td>
<td>(0,1,2,6,7,8); (3,4,5,9,10,11)</td>
</tr>
<tr>
<td>2. <em>Zwischenspiel</em></td>
<td>The Interlude disillusionment</td>
<td>(0,3,4,7,10,11); (1,2,5,6,8,9)</td>
</tr>
</tbody>
</table>
The first additional partition we will discuss is the Volk Partition. The ordinal content of the Volk Partition is applied to tone row transformation $S_2$ in Example 5.1. $S_2$ is used in this example as it is the first row transformation that the Volk Partition segments.

**Example 5.1: Volk Partition**

$S_2$ Volk Partition

\[
\begin{array}{cccccccccccc}
0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 10 & 11 \\
\end{array}
\]

As you will notice in Example 5.1, the Volk Partition segments the row into hexachords formed from alternating trichords. This partition, therefore, may also be referred to as the alternating trichord partition. The first and only appearance of this partition is in Scene 4 of Act I.

Though the alternating trichord partition only occurs once in the opera, it serves as the musical backdrop for a very significant dramatic shift. In the previous chapter we determined that the Bringt Partition occurs in two separate sections of Act I, Scene 4. Each statement of the Bringt Partition also conveys an opposing view of the people of Israel toward God, with the first statement being positive (from measures 443 through 457) and the second being negative (measures 556 through 582). The one and only incidence of the Volk Partition is found in between these two sections of the Bringt Partition and is associated with the transitioning feelings of the people of Israel toward God:

**Text**

*Sieht er gut oder böse aus?*

*Sollen wir ihn lieben oder fürchten?*

**Translation**

Does he look good or evil?

Shall we love him or fear him?
The choral counterpoint found in measures 499 through 505 is reproduced in Example 5.2, with the tone row transformations and ordinal content labeled. The alternating trichord partition is stated four separate times in this excerpt starting with the partitioning of $S_2$ in the tenor and bass voices in measures 499 and 500. The alto and soprano voices seem to echo their agreement with a presentation of the alternating trichord partition or $R\bar{l}_2$ in measures 500 through 502. This "call and response" technique repeats with the same tone row transformations from measures 501 through the end of the excerpt in 505.
As we have done with partitions in previous chapters, let us now examine the operation by which $S_2$ is changed into $Rl_2$ in the context of the alternating trichord.
partition. Before we discuss the name of this operation itself, let us reexamine the
counterpoint of the initial statements of $S_2$ and $R_{I_2}$ in measures 499 through 502. In
Example 5.3, the alto and tenor voices are listed together starting on the same beat. The
same has been done with the soprano and bass voices.

Example 5.3

*Moses und Aron*: Act I, Scene 4 (mm. 499-505)

It is evident through displaying the counterpoint in this fashion that the
counterpoint in each tone row transformation is strikingly similar. This similarity is the
first of two reasons that we will refer to the operation that here changes $S_2$ into $R_{I_2}$ as the
invertible counterpoint (IC) operation. Invertible counterpoint is a method of
composition in which two (or more) voices are written in a manner that their registral
positions may be reversed. Traditionally used in 18th-century counterpoint, invertible
counterpoint allows for the registral repositioning of melodic lines without creating
dissonant intervals. As *Moses und Aron* is atonal, there are no dissonant intervals in the
traditional sense to concern ourselves with. I am therefore calling this operation the
invertible counterpoint (IC) operation due solely to the intervallic similarities of the choral lines as well as their registral repositioning in adjacent row transformations.

Though this is the first time we have discussed the IC operation, the alternating trichord partition is the not only partition on which the IC operation acts. To observe the IC operation affecting the Deception Partition, refer back to Example 4.2.

2. The Zwischenspiel Partition and the $I^2C^2$ Operation

The second additional asymmetric partition I have found in Moses und Aron occurs exclusively in the Interlude between Act I and Act II. For this reason, I have termed this partition the Zwischenspiel, or Interlude, Partition. The ordinal content of the Zwischenspiel Partition may be seen in the segmentation of $I_9$ in Example 5.4.

Example 5.4: Zwischenspiel Partition

$\theta_9$ Zwischenspiel Partition

\[
\begin{array}{cccccccccccc}
OC = & 0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 10 & 11 \\
\end{array}
\]

Unlike the alternating trichord partition introduced in the previous section of this project, the Zwischenspiel Partition is composed of hexachords without ordinally adjacent trichords. Similarly to the alternating trichord partition, however, the Zwischenspiel Partition occurs in the context of choral counterpoint representing the people of Israel. The dramatic context of the Interlude finds the Israelites in a state of quiet panic. Moses has been meeting with God on Mount Sinai, and the people are growing restless and disillusioned. Therefore, the Zwischenspiel Partition is associated with the disillusionment of the people while Moses is on the mountain.
Example 5.5 illustrates the Zwischenspiel Partition in the context of Moses und Aron. The excerpt duplicates the choral counterpoint in measures 5 through 10 of the Interlude including only the voices relevant to our discussion of the partition. The excerpt begins with the Zwischenspiel Partition of $\text{l}_9$ found in the mezzo-soprano and tenor voices of the choral counterpoint from measure 5 through measure 7. In measure 8, a new statement of the Zwischenspiel Partition begins. This time the segmented row transformation is $S_9$ and the counterpoint occurs between the alto voice and the bass voice.

**Example 5.5**

*Moses und Aron: Zwischenspiel (mm. 5-10)*

There is much more to discuss regarding this segmentation of the row, however the full significance of the Zwischenspiel Partition will be explored in Chapter 6. For now, let us discuss the operation that moves $\text{l}_9$ in measures 5 through 7 to $S_9$ in measures 8 through 10. Like the alternating trichord partition above, the counterpoint in the partitions
of both tone row transformations is similar in note value and contour. We can also
determine by examining Example 5.5 that there is indeed registral transfer taking place
between the two statements of the partition. Again matching the IC operation from the
*Volk* Partition, the ordinal content of the upper mezzo-soprano voice of the first partition
becomes the ordinal content of the lower bass voice in the second statement of the
partition. However, there are two characteristics of these partitions that indicate that the
IC operation is not sufficient to describe the process that takes place in these measures.

First, beyond the registral repositioning of each voice of the counterpoint, the
intervallic content of each voice is also reversed. This can be seen in the mezzo-soprano
line from measures 5 through 7 and the bass line from measures 8 through 10 that are
provided in Example 5.6.

**Example 5.6**

*Moses und Aron: Zwischenspiel* (mm. 5-7 and 8-10)

This means that the operation that takes place between these two statements of
the partition is invertible *inversional* counterpoint. The second aspect to notice about the
two statements of the *Zwischenspiel* Partition is in the tone row transformations
themselves. The rows used in these partitions, $l_9$ and $S_9$, are inversionally combinatorial,
which makes the counterpoint that occurs in these measures invertible *inversional
combinatorial* counterpoint. Therefore, the operation that moves a tone row
transformation in the *Zwischenspiel* Partition into its inversionally combinatorial row is
the invertible inversionally combinatorial counterpoint \((l^2C^2)\) operation. As with the IC operation in the previous section, though this is the first time we have discussed the \(l^2C^2\) operation, it is not exclusive to the Zwischenspiel Partition. For examples of the \(l^2C^2\) operation interacting with other partitions, refer to Example 4.9 and 4.11 (the Mirage Partition) and Example 4.20 (the Bringt Partition).

As stated above, the significance of the Zwischenspiel Partition reaches far beyond what we have discussed in this section. However, before we examine this partition in further detail, we must discuss some additional material necessary for our complete analysis of the Interlude.

3. Correspondence with Michael Cherlin

The astute reader will no doubt be curious about Cherlin's thoughts on these two partitions that are not addressed in his writings on Moses und Aron. During the course of my research into this topic, I was privileged to discuss these partitions with Dr. Cherlin through email correspondence.

Though it seems that Cherlin was aware of both partitions introduced in this chapter of my project, he chose to not include them in his findings for separate reasons. Regarding the first partition introduced here, the Volk Partition, Cherlin postulates that it is merely a modification or subcategory of the Bringt Partition that serves as the dramatic setting for much of the Volk's text. Cherlin argues that the fecundity of the Bringt Partition results in a large number of variations on the ordinal content of this partition. In other words, rather than just one Volk Partition, there are in fact many Volk Partitions that all have their source in the Bringt Partition. In his opinion, the Bringt Partition is the most important of these "Volk Partitions."

While Cherlin makes a convincing argument, I tend to disagree for two important reasons. First, though the Bringt Partition functions as source material for the partitions
occurring during much of the Volk's text, the Volk Partition introduced in this project is unique. The ordinal content of the Volk Partition is derived from the alternating trichords of the tone row rather than from slight modification of the Bringt Partition. Second, the dramatic weight of this text deserves its own unique musical backdrop, and I believe Schoenberg intended the Volk Partition to be heard and understood as such. The people of Israel are caught between two opposing views of Yahweh, and the Volk Partition is the perfect musical setting for such indecision. Just as the trichords alternate back and forth between voices, so the minds of the people of Israel alternate back and forth between a love and fear of God. It may be said, then, that the Bringt Partition more accurately comes to represent the firm opinions of the people of Israel, and the Volk Partition comes to represent the indecision of the people.

Cherlin's reason for not including the Zwischenspiel Partition is much less intriguing. In his opinion, the dramatic and musical content of the Interlude seems separate from the main activities of the two principle acts. For this reason, the Interlude is left out of Cherlin's dissertation entirely. Though I agree that the Interlude seems to be its own unique section as almost an aside from the rest of the opera, I believe that the omission of the Interlude leads to a deficient understanding of the opera as a whole. The Interlude serves the important function of preparing the dramatic context of Act II with the Zwischenspiel Partition as the setting. The Interlude, and the Zwischenspiel Partition specifically, chronicles the descent of the Volk into chaos and disorder without Moses. The Zwischenspiel Partition serves a crucial role in conveying this dramatic context. Initially presented as structured and clear at the beginning of the Interlude, the Zwischenspiel Partition becomes more hectic and layered within the texture and eventually breaks down completely becoming the perfect illustration of the frantic chaos of the Volk. Apart from the dramatic context of the opera, the Zwischenspiel Partition is also crucial to determining the large-scale formal structure of the Interlude. This is the
only case in the entire opera in which one singular partition defines the dramatic context as well as the formal structure of an entire scene. This fact alone, in my mind, speaks to the importance of the Zwischenspiel Partition in a comprehensive understanding of Moses und Aron.
CHAPTER VI
FORMAL ANALYSIS: INTERLUDE

Before beginning our complete analysis of the Interlude, we will discuss several compositional techniques used by Schoenberg as musical and dramatic devices in Moses und Aron. Examining these techniques will aid in arriving at a complete understanding of the formal analysis of the Interlude. For each technique presented, a succinct definition will be provided as well as one or two examples of the technique used in the context of the opera.

1. Special Techniques

Serial Accretion

The first technique we will discuss is serial accretion.¹ Serial accretion is simply the gradual addition of pitch class content to a given section of music until the final goal, usually a complete hexachord or tone row transformation, has been reached. Schoenberg often uses this technique as a method of mimesis, or text painting.

Though this technique is used primarily in the closing scene of Act II as Aaron desperately tries to find the words to calm Moses' wrath after the golden calf, perhaps the clearest statement of serial accretion occurs in Act I, Scene 3. Example 6.1 reproduces the Young Girl's solo found in measures 255 through 259. Though this passage presents a limited example of serial accretion, the concept should be clear.

¹ Cherlin, The Formal and Dramatic Organization, 150.
Pivot Ostinato

The second special technique used in the Interlude is a pivot ostinato. An ostinato is simply a continuously repeated musical phrase or rhythm. In the context of this project, a pivot ostinato is one that begins the statement of a tone row transformation but at some point pivots back to the retrograde of the row being presented. An excellent example of this is found with row transformations $S_9$ and $R_9$ in measures 5 through 7 of the Interlude. This ostinato in these measures is reproduced (and simplified) in Example 6.2. The pivot is found in measure 7. The pitch class “A” serves as both the conclusion of row $S_9$ and the beginning of row $R_9$.  

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Example 6.1

*Moses und Aron*: Act I, Scene 3 (mm. 255-259)

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Example 6.2

*Moses und Aron*: Zwischenspiel (mm. 5-7)

---

Mimesis

The third special technique used by Schoenberg in *Moses und Aron* is mimesis. Mimesis is a term that has many meanings throughout all of art and philosophy, but in the context of our project it will simply be associated with text painting or tone painting. Text or tone painting may be understood as localized musical structures that convey the literal meaning of the text or dramatic context for which it serves as the backdrop.

Schoenberg’s use of mimesis can be seen throughout the opera in large and small ways. Perhaps the simplest yet most profound use of mimesis in the opera is found in the differences between Moses and Aaron’s vocal lines. The vocal lines for Moses, who is described in Exodus 4 as “slow of speech and slow of tongue,” are composed entirely of *Sprechstimme*—an amalgamation of speaking and singing in which the tone quality of the speech is heightened and lowered in relative pitch along with the contours of a melodic line indicated in the musical notation. However, the solos written for Aaron, who served as Moses’ mouthpiece to Pharaoh and the Israelite people, are composed of lyrical, flowing melodies.

One of my favorite instances of mimesis that occurs in the opera is found in measures 506 and 507 of Act I, Scene 3. In this scene, the people of Israel are questioning Moses and Aaron regarding where this “new god” is that they are to serve and worship. The tone rows are fairly easy to decipher in the measures leading up to 506 and can, in fact, be seen in Example 5.2 of the *Volk* Partition section. However, in measures 506 and 507 the choir sings, “*Wo ist er? Zeig ihn uns!*” which translates to,  

---

3 Mimesis in the most general sense is simply imitation. Mimesis in the arts and philosophy has its origins in Greek culture and often refers to the imitation of reality or the physical world.
"Where is he? Show him to us!" During the choral line, the tone row transformations are much harder to find, as shown in Example 6.3. This also occurs in measures 520 and 521 underscored by the same text.

**Example 6.3**

*Moses und Aron: Act I, Scene 3 (mm. 506-507)*

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**Stratification**

The final special technique we will discuss before beginning our analysis is **stratification**. Stratification is simply a layering of musical textures simultaneously. In the context of *Moses und Aron*, this could mean a multitude of things. In our study, we will define it as an overlapping of partitioned tone row transformations.

As an example, let us examine the choral counterpoint from measures 11 through 15 of Act I, Scene 1. As seen in Example 6.4, the female voices are singing the

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outer trichords of $S_0$ while at the same time the male voices are singing the outer trichords of $I_0$.

Example 6.4

*Moses und Aron*: Act I, Scene 1 (mm. 11-15)

2. Interlude Analysis

Now that we have discussed several special techniques Schoenberg utilizes in *Moses und Aron* and viewed them in context, let us practically apply this knowledge by analyzing Schoenberg’s tone row transformations in the context of an entire scene.

Perhaps the most interesting and significant movement of the opera or, more accurately, where the manipulation of the tone row occurs most clearly is within the Zwischenspiel:
the interlude between the two acts of Moses und Aron. In this movement of the opera, Moses has ascended Mount Sinai to receive the law, and the Israelites begin their descent into anxiety and chaos without him. In this analysis, we will first examine Schoenberg’s use of special techniques in the Interlude.

We shall begin our examination of these special techniques by analyzing Schoenberg’s use of mimesis in the Interlude. Schoenberg’s brilliant text painting can be appreciated from the very opening measures of this scene. The Interlude is meant to be sung by a small chorus as quietly as possible in complete darkness as the Israelites, who have been seemingly abandoned by Moses, are descending into fear and chaos. The text in the opening measures is given below:

<table>
<thead>
<tr>
<th>Text</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wo ist Moses?</td>
<td>Where is Moses?</td>
</tr>
<tr>
<td>Wo ist der Führer?</td>
<td>Where is our leader?</td>
</tr>
<tr>
<td>Wo ist er?</td>
<td>Where is he?</td>
</tr>
<tr>
<td>Lange schon hat ihn</td>
<td>It’s been a long time</td>
</tr>
<tr>
<td>keiner gesehen!</td>
<td>since he was seen!</td>
</tr>
</tbody>
</table>

The setting of this text begins with Sprechstimme in the alto line in a worried whisper: “Where is Moses?” The fear seems to spread as the baritones echo in a whisper, “Where is Moses?” The sopranos chime in, “It’s been a long time since he was seen!” The anxiety and intensity of the situation grows as the different choral parts continue to feed off of the unanswered questions posed over and over again. The texture becomes thicker and busier as the piece progresses, all the while remaining a worried whisper, until finally the voices come together in the closing measures in one last muffled, troubled question: “Where is Moses?”

The next special techniques we see used by Schoenberg in this movement are serial accretion and pivot ostinato. The first occurrence of what appears to be a statement of a tone row begins in the contrabass in measure 5. Upon further
examination, however, this proves not to be a complete statement of any transformation of the tone row. We will instead recognize this as an example of serial accretion. The contrabass begins a statement of $R_g$, however Schoenberg backtracks in the row several times before continuing with the full statement. As we follow this contrabass line further, we discover that Schoenberg does not present a complete statement of $R_g$. Instead, the contrabass line is given an alternating pattern of portions of $S_g$ and $R_g$ in a continuous ostinato-like configuration. This ostinato pattern may be observed in Example 6.2.

In addition to the *Zwischenspiel* Partition of $I_g$ that begins in the mezzo-soprano and tenor counterpoint in measure 5, Schoenberg also provides a complete statement of $I_g$ in the instrumental accompaniment. Indeed, throughout the Interlude, complete statements of $I_g$ and $S_g$ can be found in the short, rapid statements of 32\textsuperscript{nd} note figures in the accompaniment. An illustration of one of these figures from measure 5 may be seen in Example 6.5.

Example 6.5

*Moses und Aron: Zwischenspiel (m. 5)*

When these short 32\textsuperscript{nd} note figures are examined chronologically throughout the first few measures, as the pitch classes are introduced they produce a statement of $I_g$. Example 6.6 presents an illustration of this in a score reduction from measures 5 through 7 complete with ordinal labels. The rhythmic structure has been simplified to aid comprehension.
In those same measures, the choral counterpoint presents the first statement of the Zwischenspiel Partition of $I_9$. The mezzo-soprano and tenor voices introduce us to this partition with the segmentation of $I_9$. Immediately following this first statement of the Zwischenspiel Partition, the $i^3C^2$ operation moves the partition into the alto and bass voices as they echo the previous segmentation of $I_9$ with their own presentation of the inversionally combinatorial $S_9$. Both presentations of the partition may be seen in Example 6.7 that provides the choral counterpoint from measures 5 through 10 with row transformations and ordinal content labeled.
One of the most significant aspects of the Zwischenspiel Partition and the $I^2C^2$ operation is that they dictate the large scale form of the Interlude. In Example 6.7, we see the operation move row transformation $I_9$ to its inversionally combinatorial transformation $S_9$. We shall call these measures section "A" of the Interlude. This may be visualized in the outline below.

1. Introduction
2. A
   a. $I_9$ Zwischenspiel Partition
   b. $I^2C^2$ operation moving $I_9$ to $S_9$
   c. $S_9$ Zwischenspiel Partition

Another statement of the Zwischenspiel Partition begins in measure 12; however, there is a brief mezzo-soprano transitional statement that brings us back to the A' section of the scene. The mezzo-soprano choral line in measures 10 and 11 presents another small example of serial accretion as well as a structure similar to the pivot
ostinato. This line is reproduced in Example 6.8. We will come to understand Schoenberg's use of pivoting tone row transformations as being synonymous with transitional figures in the Interlude.

Example 6.8

*Moses und Aron: Zwischenspiel (mm. 10-11)*

Immediately following this transitional figure in the mezzo-soprano, Schoenberg presents another statement of the *Zwischenspiel* Partition of $I_9$ from measure 12 through measure 14 in the soprano and tenor voices of the choral counterpoint. As in the A section of the Interlude, the $I^2C^2$ operation again changes the initial partition of $I_9$ into a *Zwischenspiel* Partition of $S_9$ in the following measures. The choral counterpoint of these partitions has been reproduced in Example 6.9. Extraneous choral lines have been omitted.
Example 6.9

*Moses und Aron: Zwischenspiel (mm. 12-17)*

This section will be referred to as $A'$. The choral counterpoint in this section has become more complex when compared with the $A$ section, and voices that are not part of the partition have now begun interjecting with statements of complete tone rows. This
can be seen with the statement of $I_9$ in the bass voice and $S_9$ in tenor voice in Example 6.9.

These two complete row forms also present an excellent example of serial accretion. The excerpt in Example 6.10 highlights this serial accretion in the bass voice from measures 12 through 14. Second, the instrumental accompaniment has become much more complex, and the texture has gotten thicker both in the choral counterpoint and the accompaniment.

Example 6.10

*Moses und Aron: Zwischenspiel* (mm. 12-14)

Another transitional section occurs in measures 18 through 20. This time, however, Schoenberg is transitioning into the B section of the piece. This is also the only transitional section that does not include a pivoting row transformation figure. Instead, Schoenberg chooses to transition here by presenting hexachords from multiple row transformations. A reproduction of these hexachords from measures 18 through 20 may be seen in Example 6.11.
With this new information, our outline is expanded:

1. Introduction
2. A
   a. I₉ Zwischenspiel Partition
   b. I₂C₂ operation moving I₉ to S₉
   c. S₉ Zwischenspiel Partition
   d. Pivot Transition
3. A’
   a. I₉ Zwischenspiel Partition
   b. I₂C₂ operation moving I₉ to S₉
   c. S₉ Zwischenspiel Partition
   d. Hexachord Transition

The B section of the piece is also defined by the presence of the Zwischenspiel Partition. This time, however, the partition appears twice simultaneously within the choral counterpoint. To illustrate this, the choral counterpoint from measures 20 through 22 is reproduced in Example 6.12. In this excerpt, the soprano and tenor voices are presenting the Zwischenspiel Partition of I₉ as the mezzo-soprano and baritone voices...
are presenting the partition of $S_6$. A similar pair of partitions in the choral counterpoint occurs again in measures 24 through 26 with $S_6$ segmented in the mezzo-soprano and alto voices and $I_9$ segmented in the tenor and bass voices. The $I^2C^2$ operation may be seen in these measures as interacting with the simultaneous statements of the Zwischenspiel Partition but also as moving the statements of the partition in measures 20 through 22 to their inversionally combinatorial row transformations in measures 24 through 26.

**Example 6.12**

*Moses und Aron: Zwischenspiel* (mm. 24-26)

The B section of the Interlude is also unique in that it includes a transitional pivot figure between the two pairs of statements of the Zwischenspiel Partition. This transitional pivot figure occurs in the soprano and baritone voices of the counterpoint in measures 22 through 24 and may be seen in Example 6.13.
Following the B section, Schoenberg presents another pivot figure to transfer into the C section of the Interlude. This transition occurs from measures 26 through 28 in the mezzo-soprano and tenor voices. As the mezzo-soprano pivots from R₁₀ to I₉, the tenor pivots from R₉ to S₉. (See Example 6.14.)

In the final choral section of the Interlude, Schoenberg presents completely new material. Similar to the B section, in measures 28 and 29 we see two simultaneous statements of the Zwischenspiel Partition. There are three differences, however, between these measures and the preceding section that can be observed in Example 6.15.
First, every time Schoenberg has utilized the Zwischenspiel Partition thus far it has segmented either \( I_9 \) or \( S_9 \). In this excerpt, however, the row transformations being segmented are \( R_9 I_9 \) and \( R_9 \). This transition into the retrograde transformations may be understood as representative of the impending chaos and "backwards" thinking of the Volk in the absence of Moses. Second, in measures 28 and 29 the hexachords of the Zwischenspiel Partition are subdivided into trichords that appear in different vocal lines. The first trichords of the \( R_9 I_9 \) segmentation appear in the soprano and baritone voices of measure 28, yet in measure 29 the tenors take over for the sopranos to finish the partition with the baritones. Finally, the ordinal content of this statement of the Zwischenspiel Partition is slightly different than those we have seen before. To illustrate
this, the first partition of I₉ in the Interlude from measure 5 through 7 is given in Example 6.16 along with the RI₉ partition from this section.

**Example 6.16**

*Moses und Aron: Zwischenspiel* (mm. 5-7 and 28-29)

The difference occurs in the second half of the partitions. The two voices of counterpoint in the "actual" Zwischenspiel Partition contain the ordinal content (0, 3, 4, 7, 10, 11) and (1, 2, 5, 6, 8, 9), while the two voices of the Zwischenspiel Partition in section C of the Interlude contain the ordinal content (0, 3, 4, 7, 8, 11) and (1, 2, 5, 6, 9, 10). I believe this deviation from the normal presentation of the Zwischenspiel Partition is another brilliant example of mimesis. Just as the people are dissolving into chaos and disorder apart from their leader, so the natural order of the partitioning is dissolving into disorder.
This theory is confirmed by the following measures. Rather than presenting any ordered partition statement, Schoenberg presents three hexachords from different row transformations segmented into trichords. (See mm. 29-31 in Example 6.17.) Upon closer examination, however, this passage is revealed to be a more chaotic presentation of the pivot motion that has served as transitional material several times before. These pivot motions can be most clearly observed in the soprano voice (R₉ to S₉) and the bass voice (R₁₉ to I₉), though the motion occurs in all voices of the texture. This completes the C section of the Interlude and the descent into disorder for the people of Israel.

Example 6.17

*Moses und Aron: Zwischenspiel* (mm. 29-31)
3. Formal Outline

An instrumental Coda section concludes the Interlude with presentations of $I_9$ in $32^{nd}$ note figures similar to the opening of the scene. The final large-scale formal structure of the Interlude is represented here:

1. Introduction (mm. 1-4)
2. A
   a. $I_9$ Zwischenspiel Partition (mm. 5-10)
   b. $I^2C^2$ operation moving $I_9$ to $S_9$ (mm. 5-7)
   c. $S_9$ Zwischenspiel Partition (mm. 8-10)
   d. Pivot Transition (mm. 10-11)
3. A'
   a. $I_9$ Zwischenspiel Partition (mm. 12-14)
   b. $I^2C^2$ operation moving $I_9$ to $S_9$ (mm. 12-14)
   c. $S_9$ Zwischenspiel Partition (mm. 15-17)
   d. Hexachord Transition (mm. 18-19)
4. B
   a. $I_9$ and $S_9$ Partitions (mm. 20-22)
   b. Pivot Transition and $I^2C^2$ (mm. 22-24)
   c. $I_9$ and $S_9$ Partitions (mm. 24-26)
   d. Pivot Transition (mm. 26-28)
5. C
   a. $RI_9$ and $R_9$ Partitions (mm. 28-29)
   b. Trichord Partitions (mm. 30-31)
6. Coda (mm. 32-42)
CHAPTER VII
CONCLUSION

In the course of this study, the vast majority of our attention has been focused on examining the specific partitions and dramatic associations found in Moses und Aron. Much of our study has been directed toward the examination and analysis of these dramatic associations discovered by Michael Cherlin. In addition to the examination of these previously known partitions, however, this project introduced two previously undiscovered partitions and their accompanying dramatic associations within Moses und Aron. As we conclude our study, there are several desired outcomes of this project as a whole that we will have hopefully accomplished beyond that of identifying and analyzing these partitions.

The first such desired outcome is a recognition and appreciation for the brilliance of twelve-tone serialism as a compositional technique and of Schoenberg himself as a composer. This inherent genius of serialism is discussed at length, noting specifically the properties of functional orchestration and inversional combinatoriality. The dramatic associations and characterizations made through partitioning and tone painting dispel any misconceptions of serialism being a limiting compositional style devoid of creativity. This project has also displayed the unique properties of the specific tone row chosen by Schoenberg as the foundation for Moses und Aron, noting specifically the inversional combinatoriality inherent in this specific row as it serves as the basis for many of the partitions and operations presented in previous chapters.

The second of the desired outcomes of this project is a proof of the concepts of row partitioning and dramatic association within Moses und Aron. To accomplish this, I have chiefly examined the partitions introduced by Cherlin in his dissertation. In my analysis of these
partitions, distinction is made between those partitions that are symmetric and those that are asymmetric. In the course of our examination of the dramatic associations of these partitions, we have also discovered and discussed several relationships and operations that define "interactions" and transformations among tone rows.

The third desired outcome of our project may be understood as an acceptance of the validity of two distinct yet interdependent hypotheses. The first hypothesis postulates that there are two significant partitions that have been previously omitted from a complete understanding of Moses und Aron. I have termed these two partitions the Volk Partition and the Zwischenspiel Partition. Chapter 5 presents evidence of the importance of the dramatic association of each partition and also introduces two unique operations that define the relationship of tone rows in these partitions: the Invertible Counterpoint (IC) Operation and the Invertible Inversionally Combinatorial Counterpoint ($I^2C^2$) Operation.

The second hypothesis presented may be understood as an extension of the first and deals specifically with the importance of the Zwischenspiel Partition. Chapter 6 provides a complete formal analysis of the Zwischenspiel, or Interlude, scene in Moses und Aron. This analysis cements the presupposition that the Zwischenspiel Partition is a significant oversight in the current understanding of the row partitioning within Moses und Aron for several reasons. Primarily, the Zwischenspiel Partition is the only partition used throughout the Interlude and is, therefore, the only partition that defines an entire scene in the opera. In addition, the Zwischenspiel Partition presents the most extended example of dramatic association within the opera. As the scene progresses, the partition begins to dissolve as it serves as a representation of the people of Israel dissolving into chaos and disorder without Moses. Finally, the Zwischenspiel Partition is the only partition in Moses und Aron that defines the large scale formal structure of an entire scene.

The final and arguably most important outcome of this project is a deepened appreciation for the place Moses und Aron holds in Schoenberg's compositional oeuvre and in
music history in general. Conceived during a time of great turmoil and persecution, *Moses und Aron* stands as a monument to Jewish strength, faith, and perseverance in the face of such hardship. More importantly, perhaps, is the recognition of Schoenberg finding deep personal connection with the Exodus narrative and with Moses specifically. Though exiled and stripped of his dignity, Schoenberg, like Moses, clung tightly to his faith in the promises of God and the position of Israel as His chosen nation.

As we conclude this project, it has hopefully become evident that Schoenberg's tone row partitioning is crucial not only to the dramatic development and resolution in *Moses und Aron*, but also has significant impact on formal structure. In addition, our analysis has shown that the *Volk* Partition and the *Zwischenspiel* Partition have been critical gaps in the prior study of tone row partitions in *Moses und Aron*. Both partitions exhibit Schoenberg's compositional brilliance through the marriage of the dramatic context of the opera with the musical setting. Finally, our study has succeeded if it has presented to the reader any new revelations related to the compositional style of twelve-tone serialism or the formal and dramatic complexity of Schoenberg's *Moses und Aron*. 
APPENDIX I: NORMATIVE MATRIX FOR MOSES UND ARON

In the normative twelve-tone matrix, the prime form of the row ($P_0$) is considered to be the first sounding tone row in Moses und Aron. Inversional transformations are labeled by their starting pitch class with $I_0$ being the transformation that starts on the same pitch class as $P_0$.

Notes:
Prime forms ($P_n$) are read left to right.
Inversion forms ($I_n$) are read top to bottom.
Retrograde of prime forms ($R_n$) are read right to left.
Retrograde of inversion forms ($R_{I_n}$) are read bottom to top.

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APPENDIX II: ABSOLUTE PITCH MATRIX OF MOSES UND ARON

In the absolute pitch twelve-tone matrix, the prime form of the row (P₀) is considered to be the transposition of first sounding tone row in Moses und Aron that begins with pitch class C. Inversional transformations are labeled by their starting pitch class with I₀ being the transformation that also starts on pitch class C.

Notes:
Prime forms (Pₙ) are read left to right.
Inversion forms (Iₙ) are read top to bottom.
Retrograde of prime forms (Rₙ) are read right to left.
Retrograde of inversion forms (RIₙ) are read bottom to top.

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| P₂  | E   | F   | B   | A   | A_b  | D   | C   | D_b | E_b | G_b  | G   | R₂
| P₃  | E_b | E   | B_b | A_b | A   | G   | D_b | B   | C   | D   | F   | G_b | R₃
| P₄  | F   | G_b | C   | B_b | B   | A   | E_b | D_b | D   | E   | G   | A_b | R₄
| P₅  | G_b | G   | D_b | A_b | G   | G   | F   | B   | A_b | C   | E_b | E   | R₅
| P₆  | D_b | D   | A_b | G_b | G_b | F   | B   | A_b | A_b | A_b | A   | B_d | E_b | R₆
| P₇  | B_b | B   | F   | E_b | E   | D   | A_b | G_b | G   | A   | C   | D_b | R₇
| P₈  | G   | A_b | D   | C   | D_b | B   | F   | E_b | E   | G_b | A   | B_b | R₈
| P₉  | G_b | G   | D_b | B   | C   | B_b | E   | D   | E_b | F   | A_b | A   | R₉
|     | R₉  | R₁₀ | R₄  | R₂  | R₃  | R₇  | R₅  | R₆  | R₈  | R₁₁ | R₁₀ |
APPENDIX III: LEWIN’S MATRIX OF MOSES UND ARON

In Lewin’s twelve-tone matrix, the prime form of the row (S₀) is considered to be the first sounding tone row in Moses und Aron. Inversional transformations are labeled based on their inversional combinatoriality with the prime transformations in the row. I₀ is the transformation that is inversionally combinatorial with S₀.

Notes:
Prime forms (Sₙ) are read left to right.
Inversion forms (Iₙ) are read top to bottom.
Retrograde of prime forms (Rₙ) are read right to left.
Retrograde of inversion forms (R₁ₙ) are read bottom to top.

\[
\begin{array}{cccccccccccc}
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S₁₁ & Aₓ & A & Eₘ & Dₘ & D & C & Gₓ & E & F & G & Bb & B & R₁₁ \\
S₅ & D & Eₘ & A & G & Aₓ & Gₓ & C & Bb & B & Dₓ & E & F & R₅ \\
S₇ & E & F & B & A & Bb & Aₓ & D & C & Dᵦ & Eₘ & G & Gₓ & R₇ \\
S₆ & Eₘ & E & Bb & Aₓ & A & G & Dₓ & B & C & D & F & Gₓ & R₆ \\
S₈ & F & Gₓ & C & Bb & B & A & Eₘ & Dₓ & Dᵦ & E & G & Aₓ & R₈ \\
S₂ & B & C & Gₓ & E & F & Eₘ & A & G & Aₓ & Bb & Dₓ & D & R₂ \\
S₄ & Dᵦ & D & Aₓ & Gₓ & G & F & B & A & Bb & C & Eₘ & E & R₄ \\
S₃ & C & Dᵦ & G & F & Gₓ & E & Bb & Aₓ & A & B & D & Eₘ & R₃ \\
S₁ & Bb & B & F & Eₘ & E & D & Aₓ & Gₓ & G & A & C & Dᵦ & R₁ \\
S₁₀ & G & Aₓ & D & C & Dᵦ & B & F & Eₘ & E & Gₓ & A & Bb & R₁₀ \\
S₉ & Gₓ & G & Dᵦ & B & C & Bb & E & D & Eₘ & F & Aₓ & A & R₉ \\
R₁₀ & R₁₄ & R₄ & R₂ & R₃ & R₇ & R₁ & R₅ & R₁₆ & R₈ & R₁₁ & R₁₀
\end{array}
\]
GLOSSARY

Aggregate – A complete grouping of all twelve pitch classes of the chromatic scale

Combinatoriality - A property of certain derived rows where the initial partition or segmentation may be combined with one or more of its transformations to create an aggregate

Component – An ordered subset of a partitioned row

Counterpoint – Lines of music that sound as harmonic simultaneities (polyphony) yet are independent in rhythm and contour

Functional Orchestration – The idea that any pitch classes extracted from a selected tone row may be given linear emphasis in one voice while the remaining pitch classes of the row sound in another voice or in the accompaniment

Hauptstimme – German for “primary voice”

Hexachord – A group of six pitch classes

Interval Class Vector – A six digit numerical representation of the interval class contents of a given pitch class set

Inversion (I_n) – The intervallic opposite of the tone row chosen as the basis of the piece (S_0). May be transposed up or down by interval and is labeled in analysis “I” to indicate Inversion and assigned an integer from 0 through 11 to indicate the interval of transposition.

Inversional Combinatoriality – The relationship between two tone rows such that the principal’s primary hexachord is comprised of a tone row inversion’s second hexachord (at any transposition level), though the pitch classes need not be presented in the same order. Thus, the first hexachord of the prime row and one or any inversional transposition create an aggregate.

Invertible Counterpoint (IC) Operation – An operation that acts upon tone row transformations in the Volk Partition

Invertible Inversionally Combinatorial Counterpoint (I^2C^2) Operation – An operation that acts upon tone row transformations in the Zwischenspiel Partition

Mimesis – Text or tone painting

Normal Order – An ordering of the pitch classes in a given pitch class set that is the most compact
Operation – The process by which one tone row transformation is changed to another

Partition – A grouping of ordered subsets of a tone row such that the whole row is represented by these smaller components.

Pitch Class (PC) Set – An ordered or unordered group of pitch classes

Pivot Ostinato – An ostinato figure comprised of shared pitch classes that "pivots" from one row transformation to another

Prime Combinatoriality – The lack of shared pitch classes between a hexachord and one or more of its prime transpositions. Because it is determined by examining row transpositions, this type of combinatoriality is also referred to as Transpositional Combinatoriality.

Prime Form (Set Theory) – The numerical representation of the pitch class contents of a set derived from their normal order

Prime Form (Sn) (Serialism) – The tone row chosen as the basis of the piece which may be transposed up or down by interval and is labeled in analysis “S” to indicate prime and assigned an integer from 0 through 11 to indicate the interval of transposition

Relationship – A shared characteristic among tone row transformations or partitions

Retrograde (Rn) – The sequential reversal of the tone row chosen as the basis of the piece (So). May be transposed up or down by interval and is labeled in analysis “R” to indicate Retrograde and assigned an integer from 0 through 11 to indicate the interval of transposition

Retrograde Combinatoriality – The lack of shared pitch classes between a hexachord and its retrograde transformation. This type of combinatoriality is considered inconsequential as any tone row has hexachordal retrograde combinatoriality with itself.

Retrograde Inversion (Rln) – The intervallic opposite of the sequential reversal of the tone row chosen as the basis of the piece (So). May be transposed up or down by interval and is labeled in analysis “RI” to indicate Retrograde Inversion and assigned an integer from 0 through 11 to indicate the interval of transposition.

Retrograde Inversional Combinatoriality – The lack of shared pitches between a hexachord and its retrograde-inversional transformation

Row Derivation – Combining segments of pitch classes to yield a complete twelve-tone row

Serial Accretion – The presentation of a tone row transformation by an additive process of pitch classes
Set Form (Serialism) – The label resulting from the combination of the transformation of a tone row (S, I, R, or RI) and its transpositional level, e.g. S₂ and RI₅

*Sprechstimme* – An amalgamation of speaking and singing in which the tone quality of the speech is heightened and lowered in relative pitch along with the contours of a melodic line indicated in the musical notation

Stratification – The layering of one musical texture or motive with another

Subpartition – A partition that has been further segmented, e.g. a hexachord subpartitioned into two trichords

Tetrachord – A group of four pitch classes

Tone Row – An ordered arrangement of the twelve pitch classes of the chromatic scale

Trichord – A group of three pitch classes

Twelve-Tone Matrix – An ordered presentation of the 48 possible row transformations of a given twelve-tone row
Bibliography


Rufer, Josef. _Composition with Twelve Tones Related Only to One Another_. Translated by Humphrey Searle. London: Barrie and Jenkins, 1970.


