SUNSETS

A COMPOSITION FOR WIND ENSEMBLE

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ABSTRACT

Sunsets is a 12-minute musical work scored for wind ensemble. The accompanying paper discusses topics related to the work’s creation, compositional tools used to produce the work, and how the music may be perceived by audiences. Sunsets was inspired, in part, by Mark Rothko’s painting Orange and Yellow, 1956. The structure of both Sunsets and Rothko’s painting are based on proportional architectures. Within the form of Sunsets are various structural levels that explore musical parameters of texture, orchestration, and register. In addition to formal aspects of the piece, Sunsets’ musical narrative will be examined.
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Chapter 1

Introduction

Throughout the 20th century, the canon of musical literature for wind ensemble expanded immensely. From the middle of the century onward, it was not uncommon for composers to experiment with different musical aspects of writing for such a group. Modern approaches to texture, orchestration, and overall musical organization became important trends that shaped the future of wind ensemble repertoire. At the same time, much of the standard wind literature from the early half of the 20th century, based on more-traditional compositional methods, remained. This piece, for wind ensemble, entitled Sunsets, explores traditional and contemporary approaches to large ensemble writing and combines these techniques with new compositional methods of organization.

The main focus of Sunsets is the presentation of musical ideas in an organizational model based on proportional aesthetics. This model is found in the largest levels of the piece and in the smallest. Various structural levels are highlighted by different musical parameters and material. For instance, the smallest units of time focus on musical gestures and building phrases, while the largest components emphasize the overall shape of the piece. The link between these large and small-scale ideas is how they are organized within the proportional architecture.
A visual representation of this aesthetic organization can be found in Mark Rothko’s (1903-1970) painting *Orange and Yellow, 1956*. Rothko’s output from the 1950s was the genesis of what would become known as Color Field painting, a style that can be characterized by examining the relationships of color and shapes. There are two distinct elements that link *Orange and Yellow, 1956* and *Sunsets*. Both works present an overall theme of duality, which is directly linked to their organization and proportional concepts. By exploring Rothko’s work one can understand this duality on multiple structural levels. In the same fashion, an analysis of *Sunsets* will reveal the same concepts at work as important compositional tools and organizational markers. First, a brief introduction to Rothko’s Color Field work and the duality theme will clarify the context of *Orange and Yellow, 1956*. After an understanding of these concepts, it is easier to show how these ideas translate to the musical material in *Sunsets*.

There are other important organizational components of *Sunsets* that are not inspired from the Rothko painting. Expanding voicing structures help outline the registral development of the ensemble. Also, in the process of working with these voicings, other contemporary approaches to vertical chord construction were incorporated. Specifically, *Sunsets* utilizes voicing models and orchestration from the spectral school based on register and the overtone series.

Utilizing a sectional form, *Sunsets* presents three primary approaches to texture. The first method deals with individual musical gestures: how these gestures are presented in time, and in which contextual settings they occur. The
second concept includes the primary components of melody and harmony. The third approach involves multi-layer textures, in which each layer has a different function. Throughout much of the piece, these three textural approaches are used one at a time. However, there are instances in which they are combined into a multi-textured method.

As previously noted, various structural levels of *Sunsets* are created by proportional relationships; the same ratios used in the large-scale organization are also used on the smallest. For example, there are instances where the melodic material is presented in a polyrhythmic fashion using the identical proportions that create the large framework. Also, the metric divisions of *Sunsets* reflect these same ratio divisions. By using the same techniques to configure these different layers, *Sunsets* has a degree of compositional uniformity throughout its construction.

The final chapter addresses issues that may be encountered by conductors, individual players, ensembles, and even audiences. Overall, the practical considerations for conductors and players, if any, are few. This chapter, then, focuses on questions related to the perception of the compositional techniques used in *Sunsets*. Furthermore, because many of the structures and ideas in *Sunsets* come from work done before the actual composing of any musical notes, it is relevant to discuss the necessity of strict adherence to pre-compositional models.
Chapter 2

Mark Rothko’s Work

Arguably, Mark Rothko is one of the most influential figures in 20th century Modern art. From his association in the 1950s with the persuasive Irascibles to the staggering modern-day price of his works, Rothko has left an indelible imprint on the art world. There is even an artistic and non-denominational religious space bearing his name that houses some of his work, the Rothko Chapel, in Houston, Texas.

Some of Rothko’s most notable work stems from Abstract Expressionism and became known in the 1950s and 1960s as Color Field painting. Almost all of his artistic output from the 1950s onward typifies this style, which many characterize as focusing on relationships of shape and color. In the vast majority of his Color Field works Rothko presented an entire canvas of just a few colors arranged in simple geometric shapes, usually rectangles. He rarely used more than a handful of colors in any one of these given paintings and many of the titles reflect his color choices for the work, such as *Orange and Yellow, 1956*.

*Sunsets* uses an approach similar to Rothko’s organization as an important thread connecting the two works. Just as Rothko’s work focuses on a simple themes presented as overlapping textures and colors that create tension, one of the goals for *Sunsets* is to create a framework that explores musical textures and colors in the same fashion.
Concepts in Rothko’s Work

One important concept in Rothko’s work explored in *Sunsets* is the idea of duality. In Rothko’s work, duality takes the most identifiable form of two contrasting colors. In the particular painting that inspired *Sunsets*, the colors were orange and yellow. Initial sketches for *Sunsets* began with the same two-color concept. As the composing progressed, the duality concept centered around the musical climax. Musical material occurring before the climax corresponded to one ‘color’ of Rothko’s painting and material occurring after the climax corresponded to the second ‘color.’

On another level of Rothko’s work, the duality theme is expressed in a different manner. When one examines *Orange and Yellow, 1956* the two colors are presented in anything but a simple fashion; there are multiple shades and hues of both colors that overlap and flow into each other. On the surface, the construction and organization of Rothko’s work is simple: the painting illustrates the relationship of two colors. Yet, by examining the material on a variety of levels, one can find contrasting concepts of activity and stagnation, sparseness and density, complexity and simplicity.

Thus, Rothko’s textural concepts became an important organizational component of *Sunsets*. Within each of the two colors represented, the goal was to explore different orchestral approaches and textures that were composed of recurring themes, motives, and gestures.
Examples of Orchestral Duality

Sunsets expresses orchestral duality by scoring similar musical passages for different instruments, families, and/or registers. In the first section of the piece (measures 1-36) an important musical gesture is presented: the long sustained note E-natural that appears in octaves from E4 down to E1.

![Figure 1. E-natural from E4-E1 as orchestrated in piano - Measures 1-4](image)

In contrast, the same E-natural gesture appears just before the final section (measures 146-175), beginning in measure 137, orchestrated in octaves from E4 up to E7.

![Figure 2. E-natural from E4-E7 as orchestrated in piano – Measures 137-139](image)

This same principle has also been applied to other gestures from the opening and closing sections. Measure 4 has two held notes, F#4 and D4, and
these same two pitches are reflected in measure 169 an octave lower. The gesture in measure 7, featuring G5 and C#6 is echoed in measure 172 in a lower register - G2 and C#3.

Essentially, the orchestration of the opening sustained notes has been divided in two around the E4 octave and the gestures are then mirrored around this register. Gestures voiced in the lower half of the ensemble in opening section are voiced in the upper half of the ensemble of the closing section, and vice versa. To further emphasize the importance of the E4 octave, instruments voicing the sustained E-natural in the closing section gradually drop out of the texture as the end of the piece approaches, leaving only the E4 octave at the end of the piece.

Another pair of contrasting sections, measures 37-72 and measures 110-145, contain examples of mirrored orchestration on two structural levels. First, within the context of a middle ground framework, measures 37-45 feature a melodic figure and accompaniment in the middle-to-low registers of the woodwinds.
Measures 128-136 utilize the same textural approach but in a contrasting orchestration: muted high brass.
While the textures and rhythms are similar, the use of different registers, timbres, and pitches places the melodic material a different context.

Within a localized context, measures 37-45 and measures 128-136 use a stratified texture to explore different timbral pairings. A single-line melody is present in the second clarinet at measure 37 and the vibraphone in measure 128, then broken apart one note at a time and added back to the melodic line in a variety of instrumental combinations. The combinations use a different coupling of instruments for each melodic note, while the second clarinet and vibraphone retain the entire melody, creating a smooth melodic texture. For instance, the second clarinet’s first note at measure 37 is G#4, which is also scored an octave lower in the bass clarinet and bassoon 1. The second melodic note, F#4, is accompanied by an F# in the tenor sax and bassoon 2. The same textural approach applies to the corresponding melodic material in measures 128-136. Although matching the register of each melodic note is an important factor, it was less of a consideration for the accompanying instruments than was achieving a different combination of timbres for each melodic note. Thus, the melodic line in both instances is supported by a different combination of instruments for each note.

Another sub-section that contributes to the duality theme in *Sunsets* is the musical material in measures 55-63 which is reflected in later measures 119-127. Similar to the two cases mentioned in the previous paragraph, these areas utilize similar rhythms and a similar textural approach but contextualize the material in a
different orchestration. The first segment (measures 55-63) utilizes a trombone choir accompanying a single melodic line in the tuba.

![Figure 5. Measures 55-63](image)

The low registers of the texture give the passage a muddled, heavy feeling augmented by situating the melody underneath the accompaniment. In contrast, measures 119-127 employ the upper registers of the clarinet choir with the melodic line on top of the accompaniment.

![Figure 6. Measures 119-127](image)

The mirrored orchestration principle is thus utilized in two ways: scoring the material for two different instrumental choirs in different registers of the ensemble and inverting the melody/accompaniment relationship within this texture.

**Overall Textural Development and Duality**

As briefly described at the beginning of the chapter, the textural layout and goal of *Sunsets* is to present a simple surface level theme that gradually
becomes more and more complex. The overall textural organization is related to
the two main sections of the piece described at the beginning of the chapter: 1)
music that builds to the climax or 2) music that leads away from it. *Sunsets’*
approach is to transform the simple opening texture into a complex one through a
gradual development in ensemble density that peaks at the climactic moment.
This takes place by moving from a transparent, sparse, slow moving texture to a
dense, fast paced, active one.

The overall textural development is a major component in the dramatic
shape of *Sunsets*. To achieve this, it became important to have a climactic point
somewhere in the piece where there would be intense activity in a densely-
orchestrated texture. The piece then became a process of building and layering
different sections based on textural presentation. After the apex of the piece,
revisiting and re-contextualizing these textures would offer a degree of familiarity
to the listener and give the piece a sense of returning home.

The overall form of *Sunsets* became based on orchestrational and textural
models and how these models related to the duality theme. Orchestrational
approaches would reflect the duality theme through different instrumental
combinations and register, while the textural duality would build from sparse to
dense. Other aesthetic principles of organization became the foundation for
some of the exact dimensions of the structural form, which are discussed in the
next chapter.
Chapter 3

Proportional Aesthetics and the Golden Mean

One of the first decisions faced in creating the large-scale structural framework of *Sunsets* was determining the duration of the piece. An important consideration was relating the overall duration, the largest structural component, in some way to the smallest organizational levels. Relating these two aspects through similar organizational approaches would help reflect the aforementioned duality theme.

The approach to musical time in this case was inspired by: 1) the visual aesthetics and canvas division of Rothko’s work and 2) numerical relationships involving ratios related to the mathematical concept of the Golden Mean (aka Golden Section, Golden Ratio). In Rothko’s division of the canvas, I saw what I believed to be a visual approximation of the Golden Ratio and wanted to organize the largest levels of *Sunsets* in the same manner.

Also known as the ‘divine proportion,’ ‘divine ratio’, or simply the Greek letter Phi, the Golden Mean can be represented numerically as an irrational number (1.6180339887…), similar to Pi, where numbers after the decimal point continue *ad infinitum* with no recognizable pattern or repeated sequence. The Golden Section has a documented history of aesthetic usage in European culture since the Greek Classical Era.
Applying these Concepts to *Sunsets*

Just as many aspects of aesthetic balance in visual art are measured in physical relationships, many aspects of musical aesthetics are measured in time. I wanted to create a time structure in *Sunsets* that had similar proportions to the Golden Mean, where the musical climax would be just over halfway through the piece. Structurally in *Sunsets*, I began with the duration of the piece, which I estimated between 10-15 minutes, or in terms of seconds, 600-900. The goal after determining the overall duration was to identify smaller increments of three numbers that when multiplied together equaled the amount of seconds within that range. I wanted three numbers, because I wanted to somehow relate these three numbers to: 1) the three different orchestrational approaches in the piece and 2) the smaller organizational levels such as meter and phrase.

I have a personal liking for prime numbers and began searching for a set of three prime numbers that when multiplied together would give a result within the estimated overall duration. While there are many possible combinations of three different prime numbers that satisfy this selection criteria, eventually 5, 11, and 13 were chosen. This happened to be the first combination of numbers I ran across that were all prime and when they were multiplied together equal 715, or in terms of seconds, 11 minutes and 55 seconds. At the tempo of quarter note equals 60, each beat would equal one second, creating a total of 715 beats and 715 seconds.
From this point, the Golden Mean principles would be used to determine the climax of the piece. Then, the structure would be divided into smaller sections based on the ratio relationships of the three prime numbers used. The same proportions would be used throughout *Sunsets* both on the largest scale and the smallest.

The first step in creating the highest-level structure was to divide the piece in two parts. The point at which these two parts meet would be *Sunset’s* climactic moment. The material from the first part would lead up to the climax and the material from the second part would create a sense of repose. To achieve this structural division, 715 was divided in two to find a halfway point at 357.5 units.

![Figure 7. Dividing 715 into two parts](image)

Using the numbers 5 and 11 as a starting point, an important numerical point was found at unit 325. Unit 325 was in the first half of the division, but it would be more aesthetically approximate to Phi if this marker occurred in the second half. So, the distance from 357.5 to 325 (32.5) was calculated and then added to 357.5 to achieve this marker in the second half.

![Figure 8. Moving the Golden Section Approximation to the Second Half](image)
Unit 390 was then designated as the climax of *Sunsets*. Musical material occurring before 390 would culminate at this point and musical material after would offer repose.

After determining the climactic moment and creating two distinct divisions, smaller sections were needed to organize the textural approaches in *Sunsets*. These sections needed to be large enough in scope to have two functions: 1) to explore different types of textures and 2) to contribute to the overall climactic shape. I returned to the organizational numbers I chose earlier of 5, 11, and 13. It was determined that the 715 units could be divided into five equal sections.

![Figure 9. Dividing 715 into Five Sections with Climactic Moment](image)

Noticing that units 390 and 429 were relatively close I shifted the climactic focus so that the first three textural divisions of *Sunsets* would contribute to building a climax through textural density. Each of the three sections would feature a different textural approach that would build the intensity and orchestration of the piece. The final two sections would revisit the opening textures and return the dramatic shape to a much thinner texture. Thus, the five textural sections became related to the overall binary division based on the climax.

The next task was to divide the five textural sections into manageable sub-sections. Working within the textural approach of each section, these sub-
sections would highlight other musical parameters such as: variations in texture, various orchestrational models, gestures and/or melodic material, and new harmonies. Revisiting the organizational units of 5, 11, and 13, the 143-unit sections are divisible evenly by 11 and 13. However, a more workable division appeared by using 156 units (143 + 13). The 156-unit length was divisible into four sub-sections, 39 units each, which fit neatly onto one page of music.

![Figure 10. Division into 39 Unit Sub-sections](image)

These 39 unit sub-sections could be further broken down into phrase-level lengths. The most practical way to achieve this was to create three 13-unit phrases per page. Dividing these phrases into metric divisions also incorporated 5, 11, and 13 as numeric markers. Each 13-unit phrase is broken into two 5/4 measures and one 3/4 measure. For much of the opening material, the 5/4 measures contain 5-beat motives and gestures. Two consecutive 5/4 measures equal 10 beats with the 3/4 measure containing motives and gestures starting on beat 11 of the phrase. Consequently, the organizational relationships in Sunsets can be found at the following levels, from smallest to largest: 1) the metric level, 2) the phrase level, 3) the divisions of the five textures (sub-sections), 4) the five textural sections, and 5) the climax.
Chapter 4

Voicing Structures

An important organizational parameter in *Sunsets* is various chord voicings that outline some the registral development of the piece. Even though the construction of these voicings is not directly attributed to proportional aesthetics or Rothko, fitting them into *Sunsets*’ overall framework is important to the dramatic shape of the piece. Several factors went into the creation of these voicings. The pitch content and vertical construction of the voicing structures are important components that reflect the overall duality theme. Placing these voicings into the macro-level plan of *Sunsets* incorporates them into the overall dramatic shape. Furthermore, the voicing structures integrate contemporary approaches to voicings from the spectral school.

The primary pitch collection for *Sunsets* came from the Forte set 7-15 \([0,1,2,4,6,7,8]\). This set was chosen for its symmetric qualities and rich interval vector. The arrangement of this set is mirrored around the fourth element of the set and the interval vector contains at least two of every interval.

The main building component of the voicing structures, from bottom to top, is the interval construction. To start, the largest intervals of the interval vector were used to create the widest possible voicing of the chord without surpassing an octave between chord members. The first voicing created from this method follows:
This voicing contains four major sevenths and two minor sevenths, spanning a total register of just over five octaves. The interval construction from bottom to top is symmetric: M7, M7, m7, m7, M7, M7. Because of its wide registral span, this voicing was placed near the climax of *Sunsets*.

The idea to create an overall expanding registral shape that culminates in the climax of *Sunsets* came from this single initial voicing. The overall structure expands from a single note, E4, to the widest possible range of the ensemble, then back again.

Incorporating these voicings into the larger structural layout of *Sunsets* became a challenging task. The initial idea was to place one voicing every 13 beats, aligning the registral development with the larger organizational levels. However, when it came time to compose the actual notes of *Sunsets*, the voicing structures were not used the strict fashion outlined above.
The first departure from the voicing structure plan comes at the outset of *Sunsets*. The prominent E-natural gesture is not kept only in the E4 register. By orchestrating the E-natural for the lower registers of the ensemble I was able to explore the Chapter 2 concepts of orchestrational duality. From this point I wanted to continue incorporating aspects of the voicing structure with the E-natural gesture so I used the voicings to determine the introduction of new pitches. Thus, the function of the voicings became less about strict adherence to the shape of the structures and more about providing a primary source for pitch material in the opening pages.

Following the first two gestures on page one, another departure from the voicing structures is evident is measure 5. The E-natural returns instead of progressing right away to a new voicing or new pitch material. This is done essentially to solidify the E-natural gesture as an integral building block to *Sunsets*. By repeating this gesture several times in the opening and closing sections of the piece, the E-natural’s importance is evident.

Further divergence from the voicing structures model uses spectral voicing approaches, derived from the organization of the natural harmonic spectrum. As the harmonic spectrum moves up in pitch from the fundamental, each partial appears in a certain order and in a certain register. For spectral composers, register is an important designation in orchestrational decisions.

*Sunsets* uses a voicing approach in the opening and closing gestures that is derived from the spectral school. These gestures have two primary functions:
1) to build the opening material through expanding registers and 2) create contrast between the opening and closing musical material. The first 18 measures of *Sunsets* introduce pitch material in specific registers that is generated from the first note of the piece and based on spectral concepts. As noted before, the first pitch, E-natural is orchestrated in octaves from E4 down to E1 and occurs exclusively over the first 13 beats.

The next pitches in the expanding voicing register map are F#4 and D4. F# and D in relation to E-natural’s harmonic spectrum are partials 7 and 9 respectively. Registrally, they appear in the octave just above middle C.

![Figure 13. The First 19 Partial of an Overtone Series Based on a Low E – 1/4 tones and 1/6 tones are rounded to nearest chromatic pitch](image)

In measure 4 the new pitch material, F# and D, is orchestrated for instruments in that register. The same technique applies to new pitches introduced in measure 7, G natural and C#, partials 19 and 27.

Almost all of the new pitch material in measures 1-9 is orchestrated in the octaves in which it first appears in E-natural’s harmonic spectrum. The only exception is the piccolo, which voices the G-natural an octave above where it initially appears in the harmonic spectrum. This still follows basic spectral voicing
principles, though, because once a partial appears in a pitch’s harmonic spectrum, it occurs at subsequent octaves above that register as well. Other material in the first 19 measures of Sunsets is orchestrated in the same fashion.

The contrast in orchestration in the opening and final pages has already been mentioned in the chapter dealing with ‘orchestrational duality.’ However, there are more principles at work behind this concept, besides duality, that originate directly from spectral voicing approaches.

By inverting the harmonic spectrum around a designated pitch, spectral composers devised different voicing methods. In the spectral school structuring pitches of chord voicings in the register in which they appear in the harmonic spectrum is called harmony or harmonicity (not to be confused with the chordal harmony meaning). Arranging voicings based on the inverted models of the harmonic spectrum is called sub-harmonicity. In Sunsets, the inversion is done around the pitch E4. Some of the opening pitch material from the first 19 measures appears beginning measure in 159, orchestrated for instruments in octaves below middle C.

Aside from the opening and closing sections of Sunsets, the voicing structures described in this chapter appear in limited capacity. Only the concept of expanding register remained an organizational component to the other sections of the piece. This is most evident from measures 72-106, where the overall shape of the music moves upward in the treble voices and downward in
the bass voices. This culminates at the downbeat of measure 106 which represents the widest possible voicing of the ensemble.
Chapter 5

Wind Ensemble Textural Approaches

There are three main textural approaches in *Sunsets*: A) a stratified texture based on musical gestures and motives, B) variations of homophonic textures, and C) heterophonic textures created through minimalist techniques. As outlined in chapter one, these textures are found in the five main sections of *Sunsets*. They are organized in an ABCBA form, where the first three sections build to the climax of the piece and the last two re-contextualize material and textures from the beginning. The most important aspect of these textures is how they function in relation to the climactic development of *Sunsets*.

The A sections of *Sunsets* utilize a texture which introduces musical gestures and motives in a chronological fashion. Measures 1-19 present this texture based on the expanding voicings mentioned in chapter three and are organized in phrases 13 beats long. The next sub-sections of A, measures 20-27 and measures 28-36 add new gestures, such as the tuplet runs shown below, to the sustained notes and recurring E-natural.

![Figure 14. Upper winds measures 20-23](image-url)
The return of the A section begins in measure 146, presenting the music in a similar textural approach, maintaining the pitch E-natural and its presentation as the most prominent gesture of both sections. This gesture opens and closes the piece, and both A sections can be seen as a series of events based on what is happening around the E-natural.

Functionally, the first A section uses this approach primarily to create a sparse texture that unfolds slowly and has room to build throughout the piece. When denser musical material enters later in the piece (section C), there is a heightened sense of dramatic development and contrast from section A. The second A section employs this tactic for the opposite reason; to return to a sense of familiarity and repose.
Both B sections function as transitions between the sparsest textures of *Sunsets* (section A) to the densest (section C), and vice-versa. The B sections utilize homophonic approaches that employ different aspects of traditional melody and accompaniment style. As shown in the previous figures, measures 37-45 and 55-63 from the first B section are echoed in the second B section in measures 128-136 and 119-127, respectively. These areas use a more modern homophonic presentation through a distinctly multi-layered accompaniment. Measures 46-54 explore a more conventional style, where there is a clear single line melody and traditional accompaniment figure.

![Figure 16. Measures 46-55](image-url)
Finally, measures 64-71 (mirrored in measures 137-145) offer a mixed texture that combines the E-natural from section A with the melody from measures 46-54.

All of the textural approaches from sections A and B culminate in the most densely layered material in *Sunsets*, section C. There are four distinct levels to the complex texture, each having a different function: 1) upper winds, 2) low winds and low brass, 3) high brass and English horn, and 4) percussion.

First, the upper winds provide a busy surface-level activity. To achieve this, each wind is paired with another to create a single line - piccolo with E-flat clarinet, flute 1 & 2, oboe 1 & 2, etc.
By having two instruments execute this single line, it gives the impression of constant action and movement while giving the players opportunity to breathe. Furthermore, since the contour of each line is different from one instrumental pair to the next, the texture exhibits a deeper level of activity than if each line followed the same contour.

After the upper winds, the low winds and low brass enter with a descending melodic line. Just as the upper winds are paired to create a more active texture, so are the low winds and low brass. This can be seen, for example, in the bass clarinet, contrabass clarinet, and bassoons. Each instrument has the same pitch classes, but the rests and dynamics are placed in different parts of the melodic line. Rests are placed after every two notes (for breathing) and the dynamic shape of each line highlights fortepiano markings after each rest and crescendi/decrescendi on connected notes.


Further making each line more unique are the independent changes in register.

The same techniques that make the individual lines of the low winds and low brass stand out are also used to make the ascending lines of the upper brass and English horn emerge from the texture.
Finally, the percussion section adds two more layers of activity, that when combined with the rest of the ensemble drive section C to the overall climax of *Sunsets*. Initially, a 5-beat pattern of dotted-eighth notes begins in the timpani at measure 73. This culminates in measure 90 with the addition of bass drums and tam-tam.

The timpani and bass drums then execute in unison rhythm a repeated 15 beat pattern, accented by tam-tams every five beats.

This multi-layered texture continues until measure 106, where most of the ensemble drops out and the upper winds end in a flurry of notes that proceed upward into the highest registers of the piece. After the fermata, *Sunsets* returns to the simpler textural approaches from section B. The second B section offers
an immediate respite from the density of section C and provides a transition to the reprise of the music from section A.
Chapter 6

Rhythmic Applications

The use of rhythmic structures is an important part of relating the large-scale organization of *Sunsets* to its phrase-level components. Using the same proportional models throughout the piece helps to unify the rhythmic presentation and the design of melodic ideas and gestures. All of the textural layers of section C are grouped, on some level, in a specific type of rhythmic function. However, other instances of rhythmic construction and proportional models occur in sections A and B as well.

Beginning in measure 73, the paired instruments in the upper winds alternate sixteenth and quintuplet sixteenth groupings – piccolo and E-flat clarinet, flutes 1-2, oboes 1-2, clarinets 1-2, and, later, soprano and alto sax.

![Figure 22. Upper Winds 73](image-url)
From measure 73 through the duration of section C, these figures change every
13 beats. Furthermore, every 39 beats, these figures use smaller note values,
culminating in the thirty-second notes beginning in measure 106. This rhythmic
layering helps to create an undulating surface-level texture.

As shown, the rhythmic intensity of the upper winds in section C is
arranged at various levels in *Sunsets*’ framework. Combining these rhythms with
changing contours and expanding registers helps create a sense of drama and
climax for the section and, overall, the piece.

The musical material in the low winds and low brass from section C is also
created from proportional models of rhythmic construction based on the numbers
5, 11, and 13. From their first entrance in measure 75, the rhythmic durations in
this layer use the number 11 as an important organizational tool. Initially, all of
the notes in the low winds and low brass are based on an 11-beat quarter note
pattern. In measure 84, the durations change to 11 eighth notes and finally, in
measure 91, the pattern is comprised of 11 sixteenth notes.

The melodic lines of the upper brass and English horn are constructed in a
similar fashion, only the patterns are grouped in 5 rather than 11. This layer
begins with 5 quarter notes, then changes to 5 eighth notes.

The percussion use multiple rhythmic groupings in section C. The first
figure in the timpani in measure 73 is created from a repeated pattern every five
sixteenth notes. As the section builds, three bass drums and two tam-tams are
added to the pattern.
This intensification leads to measure 91 where all three bass drums and timpani play a unison rhythm which is based on proportions of the three prime numbers. This pattern is manufactured from part of the small-scale palindromic sequence resulting from the 5, 11, 13 relationship. By measuring the distance from each of the three numbers and their multiples plotted horizontally on a number line, it creates a palindromic sequence. The sequence from 5, 11, and 13 is rather long (715 units) so only part of it is used in the construction of this specific pattern. Measuring the unit distances creates the sequence: 0 to 5 = 5, 5 to 10 = 5, 10 to 11 = 1, 11 to 13 = 2, 13 to 15 = 2, and so on. The sequence begins in this fashion: 5, 5, 1, 2, 2, 5, 2, 3, 1, 4, 3, 2, 4...

After generating the series of numbers, a single number was assigned to each beat of a 13-beat pattern. The general goal was to use a rhythmic subdivision of the beat based on the number applied to each beat. In some instances, faster notes are added intuitively to enhance the contrast between slower and faster durations. Also, in instances where the same number occurs twice, the subdivision was sometimes stretched across two beats. Next, rests were added to parts of the subdivisions to produce a further degree of rhythmic contrast. Finally, adding faster notes at the end of the pattern helps signify the end of the sequence and provides momentum into the beginning of the next repetition.

![Figure 23. Rhythmic Pattern of Bass Drum measures 91-93](image-url)
Further accentuating this section are two tam-tams that play every five beats.

Returning to sections A and B, the rhythmic relationships here are much more subtle and based more on individual gestures than sectional development. The clearest example in section A is found in the tuplets in measure 20, which use a polyrhythmic approach.

![Figure 24. Polyrhythmic tuplets - measure 20](image)

In section B, the 5-beat and 3-beat metric divisions group the tremolo figures from measures 46-54. The entrances of these figures were planned based on the metric division of the 13-beat phrase.
Chapter 7
Technical and Practical Considerations

With *Sunsets*, the challenge as a composer comes when addressing the compositional approaches and techniques used in the construction of the piece. Does it matter if these methods of organization are going to be perceived by listeners? To what degree is it important to strictly adhere to these pre-compositional models? This final chapter aims to address some of these issues.

Since distinct musical parameters of *Sunsets* are tied to different structural levels, it is important to examine perceptibility issues with the same scope. In general, the largest and smallest levels of organization are the easiest to identify as a listener. Middle-ground components can be heard, but are often the least memorable. These issues directly led to decisions regarding which musical parameters were assigned at which structural levels.

For instance, if one were to identify some type of climactic moment from *Sunsets*, it is probable that a listener would choose somewhere near the end of section C. The important factor is that the primary function of the material up to this point is to contribute to the climax, which is organized by the proportional structure. If the overall texture of *Sunsets* never changed then it would be more difficult to pinpoint some type of climactic moment in the piece. The key factors in shaping the climax of *Sunsets* are textural density, dynamics, rhythm and ensemble register. By the end of section C all of these musical parameters are drastically different than the beginning of the piece.
It is almost guaranteed that no listener will count how many seconds have occurred in building to the climax or that all performers will be exact in their rhythmic execution. However, after hearing the entire work, one can deduce that the climax is somewhere close to halfway through the piece. It helps that right after the climax, the second A and B sections are similar in length to the opening A and B sections.

As the organizational levels get smaller, perceptibility topics become more prevalent. At the sectional level (A-B-C-B-A) the primary change in the musical presentation is textural. There are some identifiable characteristics that set each of the sections apart, but more than likely the different textures are heard as parts that relate somehow to the climax. Because some of the same material is used at the sectional level, it is easier to perceive the how the organizational relationships at this level work within the overall framework.

From this point, the middle-ground components of *Sunsets* are probably the least perceivable as being related to the general proportional framework. This does not make them any less important. For the composer, these levels can act as important steps that connect musical material from the smallest elements to the largest.

In all likelihood, the meters of *Sunsets* will not be easily recognizable nor will the 13-unit phrase levels. The sub-sections of *Sunsets* maybe identifiable in many instances because of different instrumental combinations and
orchestration, but for the most part these levels are not critical to the listener’s perception of the overall shape of the piece.

These areas, then, are especially significant from a compositional standpoint in order to create: 1) material that directly connects the large and small structural levels or 2) contrasting material to the music around it.

Sections A and C both use middle-ground structures that build around a single, functional goal. In section A, the goal is to present the sustained E-natural as an important gesture; building around this gesture at various levels helps contextualize it. The musical goal in section C is to build to the climax. The material organized at the intermediate levels contributes to that sectional goal. The objective of section B is primarily to spend time away from the musical material of sections A and C. The mid-level configurations are less important relating the large and small levels.

In general, the methods of organization based on numerical approaches are more than likely not audible to listeners. It is certainly not audible in the same way as Philip Glass’s Einstein on the Beach, for example. In Glass’s work, the counting of the beats aloud is an integral part of music at the phrase level. This counting gives the audience a concrete idea of how some of the musical ideas are organized numerically.

Not all of the musical elements tied to organizational procedures would be so easy to extract from Sunsets. For instance, it would be difficult to determine the polyrhythmic aspects of the low brass and low winds versus the high brass
and English horn in the multi-layered texture of section C. Without prior
knowledge of the system, it is challenging to detect the fact that the same
numbers used to create the durations of the notes in these passages are the
same numbers used to determine the overall length of the sections (and even the
climax).

For the composer using pre-compositional models, an important part of
the decision-making process is to establish how close to follow the ‘blueprints’ for
a given work. *Sunsets* does not exactly follow all of the prescribed plans set forth
before putting notes on the page. The goal of this piece was not to be as strict as
serialists like Boulez or Babbitt. Instead, it was to set forth a general framework,
based on proportions, and then use this framework as a guideline to explore
different musical parameters at different levels of organization. Sometimes, it
became necessary to bend the framework slightly, or use only part of the
framework to accommodate the musical material. Nonetheless, the result
remained very close to the original plans.