ABSTRACT

Anticipating the Unknown:
Applications of Expectation Theory in Twentieth Century Music

by

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The music of American composer Samuel Barber (1910-1981) emerged from a transformative era in which the rise of modernism systematically dismantled the musical traditions of previous centuries and revolutionized the musical experience of its audience by challenging their established expectations—the collective experiences and cognitive associations that predispose individuals to anticipate certain musical events over others.

While the thorough application of modernism overturned the familiar expectations used by listeners to process their musical experiences, Barber’s music moderates the perceptual challenges of more rigorous modernism by embracing various aspects of modernism but doing so in a manner that consciously incorporates rather than subverts the core elements of traditional composition, thereby gradually transitioning the listeners’ expectations from the familiarity of the traditional vernacular to a more modern rhetoric.

Drawing on an understanding of the cognitive process behind creating and applying musical expectations, this study demonstrates how Barber's Sonata for Piano, Op. 26 supports, departs from, or disguises the basic principles of expectation in the area of rhythm, a compelling topic since rhythm is one of the most readily accessible
fundamentals of music and one that generates equally powerful expectations. The cumulative result of this study illustrates how Barber merges the contrasting norms of classicism and modernism, skillfully interweaving these two dialects while alternately supporting or challenging traditional rhythmic expectations.
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TABLE OF CONTENTS:

ACKNOWLEDGEMENTS ........................................................................ iv

Chapter

1. INTRODUCTION ............................................................................ 1

2. AN INTRODUCTION TO EXPECTATION THEORY ......................... 5

3. EXPECTATION THEORY APPLIED TO RHYTHM ......................... 12
   Establishing Expectations through Rhythmic Devices
   Defying Expectations through Rhythmic Devices

4. EXPECTATION THEORY IN TWENTIETH CENTURY MUSIC .......... 24

5. SAMUEL BARBER’S SONATA FOR PIANO, OP. 26:
   INTRODUCTION AND FORMAL OVERVIEW ............................... 28

6. BARBER SONATA: APPLICATION OF TWENTIETH CENTURY ...... 40
   RHYTHMIC EXPECTATION

7. CONCLUSION .................................................................................. 76

BIBLIOGRAPHY .................................................................................. 79
Chapter 1: Introduction

American composer, Samuel Barber (1910-1981), occupies a unique place within the realm of twentieth century music, a transformative era that shattered the familiar foundations of Common Practice and profoundly altered the forward trajectory of classical composition. Emerging from this era, Barber’s music was heavily influenced by more progressive forerunners and contemporaries who deliberately and systematically dismantled the musical traditions of previous centuries and established the more radical dialect of modernism. These modernist composers were united in their goal of persistently defying musical conventions but articulated the new rhetoric in personal and distinctive ways, creating a musical landscape as diverse as it was extraordinary.

Although the sweeping advances of modernism remained a pervasive influence throughout the century, there were many composers who were less wholly committed to its objectives and ideals. This group of individuals adopted a more centrist approach to composition, embracing certain aspects of the progressive methodology while preserving many elements of the traditional vernacular. Barber was one such composer. His work, Sonata for Piano, Op. 26, provides a remarkable example of this amalgamation of old and new and serves as the foundation for this study.

While striking at the core of traditional composition, the rise of modernism simultaneously revolutionized the musical experience of its audience. Musical expectations—the collective experiences and cognitive associations that predispose individuals to anticipate certain musical events over others—were one of the key areas affected by this transformation. With the introduction of modernism, listeners accustomed to the rhythmic, harmonic, and formal predictability of Common Practice
composers throughout the Baroque, Classical, and Romantic eras, were faced with substantive and systematic departures from these norms, anomalies that were often pervasive to the point of abstraction. The thoroughness of this modern exodus erased the familiar cognitive anchors used by listeners to process their musical experiences and created perceptual barriers that listeners were often ill-equipped to overcome. These challenges to traditional expectations were compounded by the fact that modernist characteristics were often idiomatic to a specific piece or composer, further diversifying an already complex body of repertoire and making it difficult if not impossible to codify its common attributes and formulate relevant expectations.

The persistent complexity and diversity of progressive music continues to mystify many listeners, particularly those whose musical expectations are largely conditioned by the predictable rhythmic patterns and tonally anchored harmony of Common Practice repertoire. While the stability of traditional music includes frequent moments of tension and contrast, these instances are usually fleeting and serve as a means of refreshing the listener’s awareness rather than confounding it. By contrast, modern music deviates aggressively from these patterns, deliberately removing the familiar building blocks used by listeners to construct meaningful musical associations and thwarting the expectations needed to accurately anticipate future events. Because these listeners lack the exposure and experience needed to reorient their expectations to the progressive idiom, they often dismiss modern compositions as inaccessible or objectionable.

Moderate composers such as Barber provide a compromise to this conundrum by embracing various aspects of modernism but doing so in a manner that consciously incorporates rather than subverts the core elements of traditional composition. By
providing the listener with familiar material but then manipulating it in more progressive ways, Barber moderates the cognitive challenges of more rigorous modernism and gradually transitions the listener’s expectations from the familiarity of the traditional vernacular to a more modern rhetoric. Furthermore, Barber acknowledges the traditional equilibrium between establishing predictable patterns and then disturbing them with unexpected material; however, he inclines this balance much more towards surprise, contrasting these respective moments with much greater insistency and creating a framework in which the listener begins to anticipate both frequent and substantive change.

Barber’s Sonata makes an excellent case study for the investigation of expectation theory and its application to twentieth century music: it includes many traditional compositional elements, such as the fugue, and uses multiple conventional techniques to establish a certain degree of predictability, thereby meeting many common expectations and maintaining a greater level of accessibility. However, at the same time, Barber far exceeds the boundaries of established norms and defies expectations by incorporating more radical, progressive elements into the piece. These more disruptive elements include a high degree of chromaticism and motivic and rhythmic complexity, some of the twentieth century musical constructs often construed by the more casual listener as being difficult and inaccessible. Drawing on an understanding of the cognitive process behind creating and applying musical expectations, this study will demonstrate how Barber's sonata supports, departs from, or disguises the basic principles of expectation in the area of rhythm, including how rhythm is used as a highly transformative device in relation to the sonata’s motivic material.
The subject of rhythm makes a particularly compelling study since it is one of the most readily accessible fundamentals of music. Whereas the average listener would likely struggle to describe the basics of a harmonic progression, the spontaneous urge to tap along with a predictable pulse is a common and observable phenomenon. The strength of this natural reaction generates equally powerful expectations, making rhythmic interruptions and anomalies that much more disturbing from a cognitive standpoint. Barber’s treatment of rhythm throughout the sonata acknowledges this corollary, both establishing familiar expectations through rhythmic predictability and violating them through various more radical means. This rhythmic blend also provides a predictive template for Barber’s comparable treatment of other musical elements throughout the sonata, including melody, harmony, and form.

The following study will first introduce expectation theory and apply it to the topic of rhythm, examining the various ways in which traditional rhythmic expectations are either reinforced or confronted. This will be followed by an exploration of the rise and influence of modernism on traditional expectations and the extent to which twentieth century composers adopted this new idiom. The examination will then turn towards analysis, focusing on Barber’s treatment of rhythm and demonstrating how he combines conventional stability with a high degree of complexity and ambiguity. Finally, the analysis will consider the sonata’s motivic material, its gradual transformation in defiance of traditional expectations, and the role of rhythm and modernism in this transformation. The cumulative examination of these topics will illustrate how Barber merges the contrasting norms of classicism and modernism, skillfully interweaving these two dialects while alternately supporting or challenging traditional rhythmic expectations.
Chapter 2: An Introduction to Expectation Theory

Expectation theory is an area of cognitive study exploring one of the key ways in which the brain processes sensory input. Within the field of music, this input is qualified as the auditory information derived from various sounds and sound patterns. Over time, the consistent reiteration of this acoustic information generates cognitive associations known as response tendencies—perceptual anchors that assign substantive meaning to recurring experiences.¹ For the typical Western listener, these tendencies are largely influenced by the familiar sound systems common to Western tonal music: music that is generally tonal, follows common harmonic progressions, maintains a clear melodic line, and favors relatively predictable rhythmic patterns.

Once established, response tendencies predict the likely content and order of future events, in other words, they generate expectations of what events are likely to follow and when the events are likely to occur.² Musical what events include the sounds and associated patterns and progressions used to create a piece of music, including the tonal scalar system, standard chord progressions, and tonal harmony, as noted previously.³ Musical when events include rhythm and meter, as well as related deviations such as accents, fermatas, and ties.

In addition to informing response tendencies, when and what events serve as important anchors for more specific cognitive references known as schemata, (singular

²Ibid., 218-19.
schema) -- perceptual representations of musical norms that are conditioned by exposure to any given musical dialect. Once established, even at very basic levels, schemata filter musical input and guide listeners’ expectations, providing the tools for categorizing past musical experiences and organizing expectations for similar input in the future.\(^4\)

However, in contrast to response tendencies, which are more general, schemata represent specific musical elements common to many pieces of music, usually within a particular cultural or musical style.\(^5\) For example, musicians with a certain level of classical training use schematic references to recognize the architectural structure of sonata-allegro form and identify certain elements of the form as they occur.\(^6\)

Schematic references are most powerful in cases where patterns are strongly established over time. In such cases, various components of the pattern are linked by association and provide the listener with the consistent perceptual references needed to project the likely future organization of the pattern. However, the potency of schematic references varies greatly depending on the individual listener’s exposure to various musical norms and traditions, as well as the complexity of the musical input.\(^7\) Because of these variables, the application of musical expectation also differs significantly from person to person depending on the respective listener’s ability to recognize the patterns and understand the norms and deviations of a particular style of music.\(^8\)

\(^5\)Aiello, 216.
\(^8\)Meyer, 60-61.
In the case of trained musicians, these cognitive perceptions are much more adaptive and better equipped to respond to a wider variety of musical stimulus, as well as greater degrees of ambiguity. In addition, years of practice and experience give these individuals the independent ability to trace more discrete instances of familiar schemata, such as the various treatments of the subject of a fugue, or the evolution of the theme in a theme and variations. This background also gives trained musicians a distinct advantage over the average listener in terms of generating meaningful expectations, particularly with respect to music that is more broadly unfamiliar or diverse, including much of the twentieth century repertoire.

By contrast, the average listener generally develops schemata that are centered around Common Practice patterns—formally, tonally, and rhythmically. Because their perspectives are more or less limited to this framework, these listeners lack the broader contextual information that would otherwise inform more diverse musical experiences, as well as the tools needed to construct more significant cognitive associations related thereto. From the standpoint of expectation, the inability to readily contextualize foreign information is particularly significant because expected input is perceived as being more consonant than unexpected input. As described by noted musical composer, author, and philosopher, Leonard B. Meyer, “… the human mind, ever searching for the certainty and control which comes with the ability to envisage and predict, avoids and abhors such doubtful and confused states and expects subsequent clarification.” Since much of the modern repertoire contrasts so assertively with the expected material of Common Practice repertoire, the average listener’s reaction to it is therefore stronger and more

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9 Aiello, 216-17.
10 Meyer, 51.
conscious as the brain attempts to process the unfamiliar material and reconcile the concurrent violation of expectations. Absent some degree of clarification or re-conditioning, the listener’s traditional schemata are often completely unable to translate the modern dialect into meaningful information and it is therefore categorized as foreign and unintelligible.

Schemata, however, are adaptive and can be broadened to recognize and respond to more divergent input. Such expansion redirects the brain’s perceptual tendencies and organizational functions, much in the same way as the human palate may initially have an adverse reaction to foreign foods but ultimately acquire a taste for them after repeated exposure. Although the broad diversity of the modern rhetoric increases the challenges of developing schematic references associated with this repertoire, general exposure to its progressive tendencies often assists listeners in classifying its larger attributes, even if this categorization is nothing more definitive than to expect the unexpected.

Repertoire that combines familiar patterns with more challenging modern idioms can serve as a cognitive bridge between the contrasting dialects of classicism and modernism. This category of music applies schematic references on multiple levels at the same time, creating a multidimensional mode of deciphering information that is either sequential, simultaneous, or a combination of the two. Such multidimensionality creates a more spacious perceptual environment in which a piece of music can maintain traditional expectancies on one level while simultaneously departing from others on another.\(^\text{11}\)

Sequential information is exhibited in spoken language -- a thread of monophonic content that requires time to generate meaning and communicate a complete thought. Language is also sequential in that only a single idea or train of thought can be audibly articulated at a time.\(^\text{12}\) By contrast, visual art forms such as painting and sculpture clearly represent simultaneity but are generally not sequential.\(^\text{13}\) For example, a glance at Leonardo de Vinci’s *Mona Lisa* provides the viewer with the critical information to perceive that the painting is a demure portrait of a woman. While further examination would give the viewer occasion to notice other interesting details of the painting, such as brush strokes and shades of color, the additional time is not required to accurately process the contents of the portrait, i.e. that of a woman.

Music, however, is distinctive among various art forms and modes of communication in that it requires both horizontal and vertical space to unfold, incorporating elements that are both simultaneous and sequential.\(^\text{14}\) The horizontal aspect of music is based on sequentiality; in other words, it requires time to be fully revealed rhythmically, melodically, and harmonically. The vertical component of music is established through simultaneity—a concept most widely applicable to harmony but also exhibited through layers of rhythmic complexity, as well as contrapuntal procedures such as canonic writing, in which multiple voices are juxtaposed.\(^\text{15}\)

The building blocks of sequentiality and simultaneity are also widely applicable to the schematic references that generate and categorize expectations in music. On one


\(^{13}\)Ibid., 3-4.

\(^{14}\)Ibid., 3-4.

\(^{15}\)Sloboda, 231.
hand, expectations can be met or defied *sequentially* as the rhythmic, harmonic, and formal structure of the music is revealed over time. On the other hand, expectations can be met or defied *simultaneously* by adhering to established schemata on one level while challenging them on another. In both cases, these building blocks can be applied insistently throughout the pieces, in isolated instances, or as a broader mixture of the two.

Schematic references that are clearly established, even within the broader context of ambiguity, provide perceptual associations for the lay listener, often allowing them to recognize and anticipate future iterations of a given stimulus even if it is weakened – that is, when the musical stimulus diverges from the expected input through various means of obfuscation, development, or disruption.¹⁶ These disruptions can be temporary or more lasting.

Temporary disruptions are extremely common throughout the Classical repertoire, dating back to the music of the Middle Ages. Broadly speaking, Western tonal music leading up to the twentieth century includes interruptions that are most often fleeting in nature, consisting of select notes, isolated chords, slight variations or delays in certain chord progressions, or more temporary instances of rhythmic displacement and syncopation. These types of temporary disruptions heighten attention and are generally perceived as minor disturbances since they are soon resolved and do not impede the overall trajectory of the music.¹⁷

In contrast, disruptions are more pervasive and persistent in the progressive music of the twentieth century, creating a heightened cognitive challenge. These instances are often further removed from the average listener’s experience, particularly because of the

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¹⁶Meyer, 77-78.
¹⁷Ibid., 49-50.
wide-ranging stylistic diversity of modern repertoire, and therefore require greater consideration and reflection in order for the mind to reconcile the established schemata with the unexpected musical input.\(^\text{18}\) Taken to an extreme, some modernistic music is so fast-changing and unstable that it may disrupt schema-making altogether.

Many twentieth century compositions moderate these extremes by incorporating both familiar and progressive material, thereby incorporating existing schemata while simultaneously developing or expanding others. Since rhythm is one of the more readily accessible constructs of music, even among lay listeners, its application to twentieth century music and expectation theory make it a particularly interesting study.

\(^{18}\text{Ibid., 30-31.}.$
Chapter 3: Expectation Theory Applied to Rhythm

Whether popular or classical, a great deal of the music composed within the past few hundred years is rooted in the style of composition typical of the Common Practice Era. This includes numerous fundamental compositional traits including rhythmic stability, usually dictated by a designated meter. Within the study of expectation theory, rhythm can be identified as a *when* event and is associated with the concept of musical sequentiosity discussed previously.

In music, the *when* event of rhythm is a means of structuring the passage of time and provides a foundation for shaping and processing the response tendencies and schemata that serve as the basis for rhythmic expectation, in other words, as a predictive template for forecasting the expected onset and timing of future events.\(^{19}\) By generating certain sound shapes over a period of time, rhythm creates the perception of time and motion and provides a method for quantifying the patterns and sound shapes in which time unfolds, both horizontally and simultaneously.\(^{20}\) These sound shapes include measuring tools such as tempo, beats, pulses, and metric patterns, elements that can be used to construct meaningful associations within a given musical context.\(^{21}\)

However, over the course of music history, rhythm has rarely existed in a vacuum. Instead it has traditionally been paired with other compositional components such as traceable melodic content, clear harmonic progressions, and defined formal structures, all of which can be identified as *what* events and relate primarily to musical simultaneity.

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\(^{19}\) Thaut, 6.
\(^{20}\) Ibid., 15.
\(^{21}\) Aiello, 216.
These *what* events join with rhythm to create cognitive meaning and can be used in combination to either strengthen or weaken expectations.

In this study, these compositional tools will be applied to an examination of rhythmic expectation, focusing on two primary areas. Firstly, the analysis will show how rhythmic expectation is established through the use of traditional compositional techniques, predictable patterns, and other regularities, as well as how it is disrupted by various, more radical methods of compositional delay. Secondly, the study will focus on rhythm’s role in motivic transformation. The study will also analyze how the ensuing motivic transformation either meets or challenges rhythmic expectations, as well as the degree to which the transformation is carried out. These contrasting areas of rhythmic expectation will also be applied to examples from Barber’s Sonata.

**Establishing Expectations through Rhythmic Devices**

Throughout the Common Practice Era, rhythmic information was typically organized into a hierarchical structure of beats, pulses, meter, and rhythm. These elements served as cognitive building blocks that were traditionally used to create perceptual patterns within any given piece. The most predictable rhythmic expectations are based on patterns that are periodic in nature—in other words, they occur at regular time intervals. These recurring intervals establish an extrapolative template on which accurate and exact expectations can be based. Examples of periodic events include the ticking of a clock or the regular cadence of a marching band. These events are particularly predictable since they occur at short time intervals. Conversely, longer time intervals minimize the basis for expectation and make it more difficult to accurately
predict the onset of the next event in the series. For example, the flash of a light at the interval of a minute would be more difficult to predict as accurately as the ticking of a clock, a difficulty created by the much greater time difference between minutes and seconds. Furthermore, irregular or unexpected occurrences, such as delays within time intervals or early onsets of expected events, increase ambiguity and create uncertainty. Even if short-lived, these delays and inhibitions can create uncertainty and tension by offering the opportunity for alternative modes of continuation.\textsuperscript{22}

For example, a passenger in a vehicle traveling at a steady rate of speed along a projected route towards an established endpoint maintains the expectation of certain speeds, turns, and landmarks likely to be experienced or encountered during the trip. However, if the driver varies from the expected route or changes speeds without warning or reason, the passenger will find himself or herself in a state of temporary uncertainty regarding the direction of travel and possibly, if the deviations are significant enough, the destination itself. This uncertainty creates tension and suspense, an uncomfortable state that the mind rejects and seeks to reconcile. The longer the period of uncertainty, the greater the tension created and the more the mind seeks to regain its sense of regularity and precision.\textsuperscript{23}

The same principles of regularity can be applied to music. If singing along to a familiar tune, a group of participants would expect to maintain an established tempo. However, a change in tempo, especially for untrained musicians, would likely create uncertainty and discomfort among the participants. If the deviations in tempo were

\textsuperscript{22}Huron, 175.
\textsuperscript{23}Meyer, 26-27.
significant enough, the singers might become disoriented, lose track of their place within the music, and stop singing altogether.

The basis for periodic perception is grounded in relative arrangements of beats and how these beats are then related to each other. Beats are divisions of time that recur consistently and are uniformly accented, such as the periodic examples previously provided. They can continue to exist independently of rhythm or meter as long as they remain equal with respect to accentuation and continue to be of consistent duration. Listening to these regular beats may give rise to a basic perception of the passage of time; however, the uniformity of the beats prevents them from establishing or projecting any particular rhythm or meter. Therefore, although they create a basic awareness of the passage of time, they do not mark the passage of time in a measurable fashion.

In Western tonal music, beats usually occur within the framework of an assigned or implied meter that can be readily discerned even if the listener is unfamiliar with the piece or lacks formal musical training. A basic awareness of meter arises when beats, i.e. equal amounts of time, are assigned unequal accentuation. In short, for meter to occur, the pattern of equally accented and recurring beats must be disrupted and certain beats must be placed in positions of hierarchical importance and assigned correspondingly established and consistent points of emphasis, i.e. accented versus unaccented. These groupings and the ways in which they are accented may arise from within a particular meter and occur more regularly or contradict the metric organization and occur in a more

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24 Ibid., 102-103.
25 Ibid., 106.
26 Ibid., 115.
irregular fashion.\textsuperscript{27} Often this is accomplished through the formal organization of the composer; however, listeners can sometimes self-create the perception of meter by simply assigning accentuation to certain beats over others.\textsuperscript{28}

The perception of meter is further refined by the position of an accentuated beat relative to other beats in the series, as well as the overall predictability of the series.\textsuperscript{29} For example, in 3/4 time or “waltz meter,” the first beat of each measure is accented or “strong” and the following two beats are unaccented or “weak.” When this pattern is repeated predictably measure after measure for the duration of the waltz, it establishes a rhythmic series or hierarchical structure.\textsuperscript{30} Within this context, the overall perception of the beat can be sustained through a certain degree of ambiguity, usually projected onto the music through the means of slight tempo variations such as \textit{accelerandos} or \textit{ritardandos}.\textsuperscript{31}

The perception of a structured pulse is important in the area of music cognition for two key reasons. Firstly, a consistent pulse or pattern creates a predictable structure by which the brain can accurately anticipate future rhythmic events. In cases where a particular metric hierarchy is strongly established over time, expectations become stronger, even leading the listener to tap or move somewhat before the actual beat.\textsuperscript{32} Secondly, the perception of a basic beat or meter provides the framework for introducing contrasting rhythmic elements and determines the ways in which these elements...

\textsuperscript{27}Ibid., 102-103.
\textsuperscript{28}Thaut, 9.
\textsuperscript{29}Meyer, 106.
\textsuperscript{30}Huron, 178-9.
\textsuperscript{32}Patel, 403.
challenge rhythmic expectations. Without a clear pulse, rhythmic deviations such as syncopation would not be perceived as such, and therefore the intended emotional effect of these deviations would be lost on the listener.\(^3^3\)

Closely associated with the unit of a beat and the hierarchy of meter is the idea of pulse known as tactus, a term referring generally to the most prominent, periodic pulse established within a piece of music. In many cases, the tactus corresponds to the listener’s perception of musical emphasis, in other words, the place of greatest metric importance within a series of repeating beat units. Even untrained listeners can discern tactus, perceptions that are sometimes reinforced through physical modes of keeping time with music such as tapping the foot, clapping the hands, or nodding the head. Whether these responses are consciously or unconsciously realized, they reinforce the existence of a prominent point of metric emphasis. In the case of the “waltz meter,” as noted above, the tactus is the first beat of each measure.\(^3^4\)

Research has indicated that a strong pulse or tactus is also important from a psychological standpoint because the ability to accurately anticipate rhythmic events confirms our expectations and thereby minimizes the amount of energy we expend in processing the incoming data. Because the input is predictable, our mental functions are correspondingly methodical. If the input remains inevitable, the brain will continue predicting the same future events. However, if the events are unpredictable, the brain will expend additional energy in its attempt to anticipate what material is coming next. Since a listener’s perceptual awareness is often most alert during onsets of strong beats, tactus also plays a central role in directing the listener’s attention towards moments of

\(^3^3\) Thaut, 7-8.
\(^3^4\) Huron, 176.
greatest structural importance, whether in terms of rhythm, harmony, or melody. As is often the case in Western tonal music, moments of rhythmic importance occur simultaneously with significant onsets of melodic or harmonic material.\textsuperscript{35}

**Defying Expectations through Rhythmic Devices**

Nuances and alterations that offset predictable rhythmic patterns create moments of surprise and tension, both of which challenge established expectations and create a certain level of uncertainty and ambiguity. In the words of Leonard B. Meyer, “suspense is essentially a product of ignorance as to the future course of events. This ignorance may arise either because the present course of events, though in a sense understandable in itself, presents several alternative and equally probable consequents or because the present course of events is itself so unusual and upsetting that, since it cannot be understood, no predictions as to the future can be made.”\textsuperscript{36}

With respect to rhythmic expectation, such tension can be created through the application and manipulation of numerous compositional considerations, including metric disruption, various means of syncopation, and rhythm as a means of motivic transformation, as will be examined singly below.

\textsuperscript{35}Ibid., 176.
\textsuperscript{36}Meyer, 27.
**Metric Disruption**

In general, because rhythmic patterns are repeated consistently over the course of an extended musical passage, or even an entire movement or piece, they achieve an inevitability that allows the listener to forecast when future onsets will occur and how they are likely to be organized when they do occur.\(^{37}\) Disturbing an established meter redirects the rhythmic interest of the music, creating either increased tension or greater resolution. The extent of the perceived disruption depends on several factors, including how strongly the original pattern was established, how greatly the new pattern varies from the original, as well as how long the disruption lasts.\(^{38}\) The longer the disturbance, the more likely it is to be accepted as a permanent change in meter or, in more radical instances, as the complete dissolution thereof. However, fleeting disruptions can often serve as a means of refreshing the underlying metric unit, particularly in the case of triple meter where the predictable stress pattern of *strong-weak-weak* does not include secondary strong beats and can become more wearisome than compound meters.\(^{39}\)

Without metric clarity, the listener must rely on other elements to achieve a degree of continuity and adjust their expectations of coming events—a situation that becomes more common in the twentieth century. While a trained musician can quickly decipher more ambiguous content and reconcile their expectations to it, even if they are unfamiliar with the piece in question, these types of adjustments are more difficult for listeners who lack exposure to twentieth century classical music and whose musical

\(^{37}\)Ibid., 112.
\(^{38}\)Ibid., 117.
\(^{39}\)Ibid., 118-119.
schemata is unfamiliar with this type of input. Because of its frequent metric ambiguities, Barber’s Sonata raises these issues, which will be explored in detail in the later analysis.

**Syncopation**

Syncopation is another important means by which rhythmic expectations can be disrupted. Syncopation relies on a strongly established pulse to achieve maximum impact. This impact occurs through the respective anticipation or delay of an expected pulse. The disruption of a consistent pulse creates temporary uncertainty regarding the underlying beat and fosters a degree of ambiguity regarding future events. Because the delay is usually fleeting but occurs within the context of a clear pulse, it is perceived as an anomaly and serves as a powerful amplifier of the rhythmic content rather than as a means of annihilating the overall sense of rhythmic continuity. Syncopation can be created in a variety of ways: ties, rests, onset arrival, and note placement, such as the placement of shorter note values on strong beats and longer note values on weak beats. In such cases, as previously stated, the syncopation violates an established pattern but does not eradicate it altogether.

As a means of syncopation, accents serve as an effective timing device for obstructing schematic expectations. At its most basic level, an accent is a musical device that momentarily highlights a particular aspect of the piece such as stressing a particular note or sequence of notes, extending or curtailing its length, or altering its melodic

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40 Ibid., 125.
41 Huron, 303.
42 Meyer, 121.
43 Huron, 296-297.
While accents can be used to support structurally important moments, such as those established through meter or a consistent pulse, accents also frequently occur on an ad hoc basis and are more unpredictable in nature. In the case of rhythmic emphasis, such accents generally depart from the established pulse at unexpected moments, thereby temporarily shifting the rhythmic emphasis of the underlying rhythm and creating a certain degree of tension.

**Motivic Transformation**

The relationship between rhythm and melody plays an important role in music cognition and expectation theory. In more distinct examples, melodic and rhythmic information is combined with intense musical interest such that the amalgamation thereof becomes identifiable as an entity in and of itself, commonly known in music as a motive. Many clear examples of rhythm-focused motivic association exist throughout the Classical repertoire, including the well-known “Fate” motive from Beethoven’s Fifth Symphony in which melodic and rhythmic material are fused into a distinct motive that is subsequently transformed through various compositional means.

This type of relationship between melody and rhythm often creates somewhat of a dichotomy regarding expectation theory. On one hand, the prevalence of a strong motive cements expectations since it provides a constant that then serves as a template for generating and accurately forecasting future iterations of the same or similar events. In this capacity, melody and rhythm create a kind of schematic reference that is unique to a

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44 Meyer, 103.
45 Thaut, 10.
46 Ibid., 11.
47 Meyer, 110.
specific composition, such as the “Fate” motive noted above. In this case, the “Fate” motive immediately establishes itself as an important musical event that can be readily traced through the ensuing movements, thereby serving as a cognitive anchor for the listener’s expectations throughout the course of the work.

However, the strength and predictability of the established motive simultaneously provides a platform for violating the very expectations it has created. From a rhythmic perspective, these violations can occur when the motive is offset, augmented, delayed, or otherwise altered rhythmically. In some cases, the delay does not interrupt the overall rhythmic progression of the music; it simply enhances a certain note or chord, as is the case with the application of agogic accents. Such disruptions are significant enough to pique the listener’s attention but likely not great enough to disturb their expectation of following events. However, the more aggressively these transformational devices are applied, the greater the disruption to established expectations, both in terms of the motive’s individual identity, as well as the listener’s broader schematic references.

From a cognitive standpoint, delay creates a tension response that usually increases correspondingly with the nature of the delay. As the tension response becomes more acute, the listener will react with emotional uncertainty as the brain attempts to reconcile the delay with the anticipated outcome. Delays have the greatest effect on when events when they occur during moments of typical certainty. Within the average listener’s context of Western tonal music, these moments usually coincide with the point of strongest metric emphasis, usually the downbeat.48

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48Huron, 314-315.
The use of delay to increase tension and elicit a greater emotional reaction is regularly applied to many aspects of life. Successful entertainers are often ascribed with the gift of “comedic timing,” the art of delivering information at the moment of greatest emotional impact, a carefully refined ability often involving a slight delay. The careful application of delay and anticipation to create a slightly flexible and unpredictable rhythm is not limited to the field of music. Movie directors use delay tactics to increase viewers’ emotional responses to a particular scene or generate suspense for an upcoming scene. In film, such delays are accomplished through the application of slow motion or by interrupting or suspending critical moments by cutting away to a contrasting scene.\(^{49}\)

In the twentieth century, composers used many of the same traditional compositional methods as a means of motivic transformation but applied them in more radical ways, usually with heightened results and a more acute sense of violated expectations, as will be illustrated by later analysis of Barber’s Sonata. The shift to a more radical aesthetic emerged from the late nineteenth century when the gradual dissolution of conventional musical devices laid the groundwork for more sweeping transformations, detailed more thoroughly in the following section.

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\(^{49}\)Ibid., 317.
Chapter 4: Expectation Theory in Twentieth Century Music

The early part of the twentieth century brought with it a new era in Western art music as evident through the rise and far-reaching influence of modernism. Modernist composers challenged virtually all of the traditional elements of music including melody, harmony, rhythm, form, tuning systems, and playing techniques. Efforts to achieve such unorthodoxy took numerous forms and were embraced to varying degrees. However, the common factor unifying what were otherwise very different interpretations of modernism was the desire to depart from the familiar and replace it with the unconventional.\(^\text{50}\)

The modernists did not invent the practice of thwarting listeners’ expectations. Western tonal music provides numerous illustrations for how such techniques were applied to musical compositions for many centuries, including the manipulation of tonal expectations through the use of the deceptive cadences, half cadences, Picardy thirds, and more selective dissonance, for example.\(^\text{51}\)

Western tonal music is also replete with examples of dissonance as a means of violating expectation and creating tension, a practice that saw a marked increase in twentieth century composition. However, such examples of expectancy violation were usually limited in scope and tended to be fleeting in nature, providing only momentary interruption to an otherwise traditional musical texture. The modernists sought much more than temporary disruption of expectation; in some cases, they strove for total departure from established expectations.\(^\text{52}\)

\(^{50}\)Ibid., 331-332.
\(^{51}\)Aiello, 215.
\(^{52}\)Huron, 332.
For the modernist composers, however, their unwillingness to conform to what was expected was rooted in the psychology of expectation, namely, to challenge accepted norms and reverse conventional expectations. These composers made purposeful efforts to thwart established expectations, to deny the audience what it anticipated, and to do so in a methodical and sustained manner. These efforts at sustaining the interruption of expectations was especially significant since violating expectations, even in subtle ways, can have a significant impact on the emotional state of the listener.

Such systematic efforts began in earnest with the music of Wagner and gathered strength into the twentieth century. The movement then carried forward in various ways through the music of Schoenberg, Stravinsky, and other modernist composers. While each composer varied in their respective interpretation and application of modernism, they found common ground in creating sound patterns that persistently and intentionally challenged established expectations. These sound patterns created a new hierarchy within music composition, one in which extraordinary effects became the lingua franca, replacing, and in some cases erasing, the harmonic, melodic, rhythmic, and formal vernacular of the previous centuries.

The exploitation of these individual compositional elements created a radical aesthetic that was applied individually by each modernist composer. Because the radical aesthetic is so persistent in its defiance of musical tradition, and so far removed from the musical frameworks of the previous centuries, listeners whose schemata are based on Western tonal music have often found the music of these modernist composers to be

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53 Ibid., 332.
54 Aiello, 215.
55 Huron, 333.
56 Ibid., 347.
difficult and distasteful.

This is particularly true in cases where the listener is inexperienced in the progressive twentieth century musical aesthetic and has the expectation of input based on the Western tonal system.

Initial exposure to the radical aesthetic has sometimes resulted in severe misunderstanding and even outright hostility, as was the case in the debut performance of Stravinsky’s ballet *The Rite of Spring*, which premiered in Paris in 1913. In addition to the ballet’s unusual musical content, which was saturated with harsh dissonances and jagged, primal rhythms, the audience was further alarmed by the ballet’s pagan subject matter and its unorthodox choreography. While the initial performance and immediate reviews captured the extreme extent to which the audience’s expectations had been violated, subsequent performances indicated that the public ultimately acknowledged the elements of the radical aesthetic showcased in this work and adjusted their expectations accordingly.

The consistency of the radical aesthetic in modern music has created a so-called “contrarian schema,” a means by which the listener’s response tendencies can be adapted to expect and anticipate the unexpected. Once established, the contrarian schema allows a listener to approach more eclectic areas of music with a wider frame of reference and a greater degree of understanding. While the Stravinsky example noted above is a more extreme case, both in terms of implementation of the radical aesthetic, as well as the initial reception to the work, there are many cases throughout the twentieth century in which composers combined elements of the radical aesthetic with more traditional

\[\text{Ibid., 348.}\]
compositional components. American composer, Samuel Barber, is one such example and his work, Sonata for Piano, is a striking example of the amalgamation between traditional and radical, making it an excellent case study for how expectation theory in the area of rhythm might be applied to a major twentieth century work.
Chapter 5: Samuel Barber’s Sonata for Piano, Op. 26: Introduction and Formal Overview

Commissioned in late 1947 to mark the twenty-fifth anniversary of the League of Composers, completed nearly two years later in June 1949, and premiered in New York in January 1950 by legendary Russian pianist, Vladimir Horowitz, Barber’s Sonata is one of the most widely performed and revered piano works in twentieth century repertoire. In contrast to many of the compositions of its era that were more thoroughly radical, Barber’s Sonata maintains a higher degree of overall accessibility by juxtaposing and superimposing various traditional and progressive features within and onto the fabric of the composition. While the traditional attributes provide an overall sense of familiarity and stability, the more radical elements disturb this equanimity and provide numerous illustrations that support, depart from, or disguise the basic principles of expectation in the area of rhythm and meter.

The rhythmic departures and more radical, motivic development throughout the sonata are contained within a traditional formal structure, a conventional large form comprised of four movements. Barber’s choice of a traditional overall structure is important since it provides the listener with a familiar roadmap for navigating the more radical departures encountered throughout the piece. Similarly, the following overview of the sonata’s formal structure will provide the basic framework for the more detailed analysis of rhythm and expectation theory to follow.

The first movement, Allegro energico, is set in the general context of sonata form, identifiable by its use of thematic and rhythmic structure. This adherence to traditional
formal elements also carries through to the thematic content of the movement, including the presentation, development, and recapitulation of two contrasting themes. The first theme is comprised of a four-measure unit that focuses the ear on predominantly half step motion in the right hand melody, combined with jagged rhythms and chromatic harmony (Figure 1). As would be expected, the theme occurs most clearly in the right hand when initially presented in the exposition.

Figure 1: Allegro energico - Measures 1-8 - Exposition
In keeping with the traditional expectations of sonata form, the opening theme reoccurs at the onset of the development and the recapitulation. In the development, as expected, the theme remains identifiable but is fragmented and surrounded by wandering harmonies that are anchored by droning B-naturals in the bass (Figure 2).

Figure 2: Allegro energico - Measures 48-56 – Development
In the recapitulation, the opening theme returns in a massive climactic moment that presents the theme with frequent octave doubling, creating a thicker, richer texture (Figure 3).

Figure 3: Allegro energico - Measures 110-114 – Recapitulation
The first movement’s opening theme presents a stark and sustained contrast to the second theme, an expressive melodic line supported by smoother rhythms and more stable harmony (Figure 4). Like its predecessor, Theme 2 appears in rhythmic augmentation and diminution, as well as in multiple different registers.

Figure 4: Allegro energico - Measures 22-25
The second movement, *Allegro vivace e leggero*, is a light scherzo set in rondo form. The various sections alternate between a delicate pattering of continuous eighth note patterns (Figure 5), the first contrasting idea which includes a disjunct left hand melody (Figure 6), and another contrasting idea which comprises a jaunty waltz tripping disruptively between three time signatures: 3/4, 5/4, and common time (Figure 7).

Figure 5: *Allegro vivace e leggero* - Measures 1-4 – Initial Idea

![Initial Idea](image1)

Figure 6: *Allegro vivace e leggero* - Measures 25-29 – First Contrasting Idea

![First Contrasting Idea](image2)

Figure 7: *Allegro vivace e leggero* - Measures 45-49 – Second Contrasting Idea

![Second Contrasting Idea](image3)
The third movement, *Adagio mesto*, is of a gloomy and deliberate character, yet the melodic line is singing and even lilting in its contour and expression. It is organized in ABA form. These three sections create a large-scale dramatic and dynamic arch in the form of a long, insistent *crescendo* beginning at the commencement of the movement and reaching its peak at the middle point of the piece before gradually subsiding throughout the final section. Each section is supported by a 12-tone bass *ostinato*.

The first section opens with a lugubrious *ostinato* sequence of steady eighth note dyads (Figure 8). These dyads initially form a vertical statement of twelve tones that continues in the same order but as singular notes following the entrance of the right hand melody.

Figure 8: *Adagio mesto* - Measures 1-5
The B section begins with the same dyad figures presented in the first section (Figure 9). The section then becomes more emotionally agitated and much thicker texturally as the movement builds towards its climax (Figure 10).

Figure 9: *Adagio mesto* - Measures 11-15
Figure 10: *Adagio mesto* - Measures 27-29

Much thicker texture leading towards climax

Climax
The third section marks a return to the A material in its prime form but lacks the dyads included in the first two sections (Figure 11). As anticipated, the melody recalls that of the original A material but adds to it an inner voice that echoes portions of the melody, foreshadowing the fugal writing of the following movement.

Figure 11: *Adagio mesto* - Measures 27-29
The sonata’s fourth movement, *Allegro con spirito*, is a massive fugue in four voices, set in overall ABA form. The fugue includes many aspects of Barber’s twentieth century dialect, including the extensive use of chromaticism, a high degree of syncopation, disjunct motivic material, and references to dodecaphonic writing. However, the movement maintains many of the formal elements of a traditional fugue, including the presentation of a subject and countersubject (Figure 12), as well as the treatment of the subject through augmentation, inversion, stretto, and rhythmic variation, for example (Figures 13-14).

Figure 12: *Allegro con spirito* - Measures 1-4 – Initial presentation of Subject and Countersubject
Figure 13: Allegro con spirito – Measures 41-44 – Presentation of Subject in Inversion and Augmentation

Figure 14: Allegro con spirito – Measures 90-91 – Presentation of Subject in Stretto
Chapter 6: The Barber Sonata’s Violations of Expectation

Having conducted the preceding overview of the sonata’s formal structure, the following analysis will focus on instances where rhythmic nuances are used to violate conventional expectations. The analysis will also illustrate how Barber used these rhythmic devices to shape the overall character of this piece, disrupting rhythmic expectations in a more persistent and pervasive manner than that of previous centuries, yet not fully embracing the modern aesthetic. The study will focus on Barber’s incorporation of the disruptive rhythmic elements outlined previously, including various means of metric disruption and syncopation, each examined singly and in detail and illustrated by examples from the sonata.

Metric Disruption

One of the key ways in which Barber’s Sonata challenges traditional expectations is through the frequent disruption of a consistent hierarchy of strong and weak beats, usually perceived within the context of the designated meter. Throughout the sonata, there are frequent instances where the assigned meter is not designed to direct the rhythmic organization of the movement in the same way as it would in a Mozart Sonata, for example, where the established meter generally remains stable and generally supports the emphasis of the melodic content. Instead, the designated meter is often subordinate to the underlying pulse or rhythmic idea, creating frequent instances where the forward momentum of the piece is directed by these rhythmic pulses instead of a larger metric framework, as would be anticipated for many of the pieces written during the Common
Practice Era. Although there are many portions of Barber’s Sonata that move through a series of rapidly changing meters, even portions of the piece that adhere to a single metric marking for extended passages are often still challenged in the area of metric predictability, as will be explored in detail below.

The opening of the first movement provides an example of this departure from traditional compositional practice and immediately violates conventional expectations in the area of metric stability. At the beginning of the movement, Barber weakens the expected role of meter by emphatically reiterating a strong quarter note pulse while providing less obvious information with regards to the governing common time meter. Each rhythmic pulse includes a two-note unit - a sixteenth note followed by a dotted eighth note (Figure 15). These units saturate the opening texture of the movement, a prominence that is increased by the unit’s persistent unification with the half step motion of the melodic material, a subject that will be explored in greater detail during the study of motivic transformation (Figure 15).

The insistent reiteration of the rhythmic pulse elevates its stature from a cognitive standpoint, placing it above the traditional hierarchical superior of meter with its strong and weak beats: because of the insistence on the motive, there are no weak beats—only strong ones. The insistency of these beats underscores the overall importance of the motive to the remainder of the sonata and temporarily elevates the motive above that of the larger melodic line, an important departure from traditional practice. Furthermore, the persistent rhythmic pulses also make it easier for subsequent, contrasting rhythmic content to confuse the listener’s rhythmic sensibility in general, since the listener has less information on which to base future expectations, much in the same way as an individual
driving through a tunnel is aware of and able to make decisions based only on their immediate, limited surroundings.

The metric ambiguity at the beginning of the first movement is compounded by the fact that the movement opens with a rest instead of a strong downbeat and the two-note units that immediately follow do not follow the stress *strong-weak* pattern suggested by the time signature (Figure 15). Instead, the rhythmic unit seems perceptually to arrive more strongly on the second beat of the measure instead of the anticipated first beat. Both of these factors further relegate the designated meter to a more organizational rather than structural function and create overall ambiguity as to the prevailing meter and larger rhythmic context.

Figure 15: *Allegro energico* - Measures 1-5
These initial compositional choices represent important departures from practices of the previous centuries in which the opening of a sonata usually established the prevailing meter with great clarity. From the standpoint of expectations, it is also important to note that although Barber weakens the traditional role of rhythm and meter in many instances throughout the sonata, he does not overturn it altogether or fully embrace the radical aesthetic. On the contrary, he strikes a careful balance between meeting and defying metric expectations, a dialogue between traditional and modern that continues during the first movement and throughout the remainder of the sonata. This continual phasing in and out of focus challenges the listener’s metric awareness but provides sufficient and strong enough familiar material such that he or she does not feel lost as the music unfolds.

For instance, following the initial ambiguity of Theme 1, the first movement phases into metric focus beginning at measure 9 (Figure 16). At this juncture, there are strong downbeats for several measures in a row, all consistently in common time and following the strong-weak beat hierarchy associated with the meter. This temporarily provides a strong feeling of predictable meter for the first time in the movement.

Figure 16: Allegro energico - Measures 9-10
However, this predictability is destabilized with the return of the two-note unit in measure 11 (Figure 17). This unit once again establishes the pulse as the predominant rhythmic force above that of the designated meter. The section opens with a strong downbeat consistent with the metric clarity of the preceding two measures; however, the pulses then establish phrases longer than that of a measure, therefore disrupting the pattern of a strong downbeat at the beginning of each measure and again marginalizing the meter. The meter’s stability is further interrupted in measures 17-18 with shifts from common time to $\frac{3}{4}$ time, then back to common time.

Figure 17: Allegro energico - Measures 11-19
In addition to metric shifts and displacement of the traditional beat hierarchy within the designated meter, Barber also frequently incorporates instances of cross-rhythms throughout the sonata, stacking rhythms in ways that do not perfectly align and thereby adding to the overall rhythmic complexity and ambiguity of the sonata. For example, in measures 9-10 (Figure 18), the dotted rhythms from Theme 1 are now stacked against triplet figures in the right hand, somewhat clouding the overall clarity of the initial rhythm.

Figure 18: Allegro energico - Measures 9-10

![Music notation showing cross-rhythms in measures 9-10]

This type of rhythmic interplay occurs again in measure 16 when the left hand presents an even more expanded cross-rhythm, only the downbeat of which aligns with the right hand (Figure 19). The rhythmic interest in this measure is further compounded by the right hand rhythm that includes even eighth notes for the first time, alternating with the anticipated dotted rhythm that saturates the opening of the movement and breaking the expectation of consistently dotted units (Figure 19).
Barber further heightens the defiance of traditional rhythmic expectations in this section by incorporating a wide and disparate variety of rhythmic anomalies that lack previous, strong context and are often juxtaposed in quick succession. Since the melodic material of Theme 1 is not thematic in the Classical sense, the ear is drawn instead to the theme’s rhythmic predictability, making these rhythmic anomalies that much more important from the standpoint of violated expectations. For example, measures 17-18 (Figure 19) add further new and contrasting rhythmic material to the movement by way of two sixteenth note triplet patterns, both of which contrast with the eighth note triplets and the prevailing dotted rhythms introduced earlier in the movement. In addition, the first sixteenth note pattern in measure 17 is unsupported by any other melodic or rhythmic context, making it that much more challenging from a traditional, cognitive standpoint. The dotted rhythms return strongly in measure 19 but last only until measure 20, at which point they are interrupted again by eighth note triplet figures that lead into Theme 2 (Figure 19). Within the larger context of the metric disturbances already described, this frequent shift in note value creates a great deal of rhythmic ambiguity, making it difficult for the average listener to develop clear predictions regarding future events and challenging their traditional schematic sensibilities.
Figure 19: Allegro energico - Measures 14-23
The rhythmic uncertainty of the opening passage of the first movement begins coming into focus during the transitional material leading into Theme 2 and initially appears to become much more conventional and predictable from a metric standpoint. However, even within the context of consistent common time meter, Barber continues to challenge metric stability (Figure 20).

The rhythmic pulses in the first two measures of Theme 2 conform to the expected strong-weak stress pattern of common time, thereby establishing a clear, although temporary, metric template. This predictability is underwritten by the eighth note triplet figures that serve as the underlying rhythmic idea of Theme 2 and provide a consistent undercurrent for the first five measures of the theme.

However, despite a strong downbeat in the left hand in measure 23, the melody of Theme 2 starts on the weaker second beat of the measure. In addition, the feeling of duple time strongly established in the first two measures of Theme 2 are interrupted by two measures of quarter note triplet figures in the right hand in measures 25-26, creating a temporary hemiola effect between the right and left hands that foreshadows similar metric interplay in the second movement of the sonata.
Another example of the frequent shift between meeting and challenging metric expectations occurs in the development of the first movement (Figure 21). The development commences in common time, then rapidly alternates through several time signatures in succession: 3/2, common time, 5/4, and back to common time, creating another instance where metric prominence gives way to the importance of the rhythmic unit. The placement of the bass note octaves in this section further supports this
emphasis: each bass note arrives on a moment of melodic and harmonic importance rather than on the first beat of the measure, as would be more commonly anticipated.

While the lack of a metric pulse in this section creates some rhythmic uncertainty, Barber stabilizes the listener’s expectations by maintaining quarter note motivic pulses that are predictable and therefore easier for the listener to grasp. In addition, the trained listener anticipates a certain level of ambiguity in the developmental section of sonata form and recognizes the return of the motive from Theme 1 by its rhythm and contour. Furthermore, the uncertainty of this section is relatively short-lived since the return of strong downbeats in m. 62 reestablishes common time in its more traditional role. This example demonstrates how Barber adheres to the familiarity of traditional formal structure while maintaining a high degree of rhythmic disruption, thereby simultaneously meeting and challenging the listener’s expectation
Figure 21: Allegro energico – Measures 51-62
While initially perceived as being more metrically stable than its immediate predecessor, the second movement of the sonata also maintains a degree of rhythmic ambiguity through the subtle blend of metric emphases, including fluctuations between compound duple meter and simple triple meter as foreshadowed in Theme 2 of the first movement. In compound duple meter, each measure is divided into two groupings of three eighth notes each. The primary stress falls on the first note of the initial grouping and the secondary stress falls on the first note of the second grouping. This pattern of emphasis contrasts with the simple triple meter that is introduced later in the movement, in which the first beat of each measure is strong and the following two beats are weak. This cross-play between metric units creates a hemiola effect that subtly undermines the overall stability of the movement’s rhythm.

The opposition between these two meters is foreshadowed very discretely in the beginning of the second movement (Figure 22). The initial descending half step motive from the first movement (C-flat to B-flat) is reiterated within the texture of the first two measures of the second movement: this time written as the enharmonic equivalents B-natural and A-sharp. These two notes occur on the first and fourth eighth notes of measures 1 and 2, as well as subsequent iterations of the opening material. The placement and stemming of these melodic notes suggest a primary and secondary stress on these notes and establish the initial feeling of compound duple time, as would be expected within the context of the assigned time signature.

However, this early stability is quickly called into question in measures 3 and 4 of the movement (Figure 22). The melodic contour of these measures, as well as the way in which the left hand motion mirrors the right hand in measure 3, can easily be perceived
as being divisible by three beats instead of the established two. This contrast is somewhat muted by the fact that the underlying stress is one strong beat per measure; however, this slight modification still destabilizes the predictability of the overall rhythm, creates a slight feeling of hemiola, and faintly forecasts the triple meter waltz sections that occur later in the movement.

Figure 22: *Allegro vivace e leggero* - Measures 1-9

Beginning in measure 47 (Figure 23), the triple meter is clearly established through several means, including the time signature and strongly identifiable waltzing left hand figuration. However, the clarity imposed through these various means is once again quickly interrupted by a shift back to duple meter for one measure, then another shift back to simple triple meter. This exchange of meters, and the ensuing lack of a consistent and predictable meter, plays out for several measures before the triple meter takes temporary hold as the dominant meter.
The result of this metric disruption is that the listener remains in a state of ambiguity regarding the placement of the beat and therefore will find it difficult, absent previous exposure to the movement, to accurately predict the future rhythmic emphasis of the music. This rhythmic violation is even more acute since the waltz pattern is familiar to even the untrained listener and therefore readily perceived and adopted as an identifiable rhythm. The fact that this ambiguity saturates the rhythmic content of this movement represents a significant violation of expectations based in Common Practice music, in which rhythmic anomalies were largely fleeting and did not factor as significantly into the overall rhythmic context of the piece.

The continuous interplay between metric units that was foreshadowed in the opening measures of the second movement becomes more heightened as the movement continues, leading up to the initial climactic forte in measure 71 (Figure 24). At the onset of measure 71, the triple meter that has been dancing in and out of the rhythmic texture is firmly subjugated by two measures of strong duple time. However, even the strength and clarity of these measures is quickly diluted as the feeling of duple time quickly elides with the return of 6/8 time leading to a reintroduction of the opening material.
Figure 24: Allegro vivace e leggero - Measures 60-78
In terms of expectations, it is also noteworthy that although Barber defies rhythmic expectations in this section by disturbing the overall meter, he simultaneously maintains a level of stability through the use of constant eighth notes, much in the same way as the rhythmic pulses provided a predictable pattern in the first movement. Barber also limits the metric possibilities of the movement to either duple or triple time, often remaining within the assigned meter for large sections of the movement. Furthermore, Barber largely adheres to the traditional hierarchy of strong and weak beats within the context of any given measure or section, making the alternation between meters that much more accessible from a cognitive standpoint. Finally, Barber provides clarifying anchors for the listener through the placement of two important accents, one occurring in the right hand of measure 71 when duple time is established and the other in measure 75 with the reemergence of 6/8 time (Figure 24).

Barber’s use of metric shifts as a means of violating rhythmic expectations continues in the third movement. Similar to previous movements, the meter is subjugated to the greater musical context. As seen in Figure 25, the meter designations shift to support the varying phrase lengths, which are punctuated by octave bass notes. While these phrases maintain a consistent pulse, the lack of consistent meter creates a feeling of uncertainty and unpredictability that continues to violate traditional expectations.
A further example of metric disruption occurs in the final movement of the sonata (Figure 26). In this case, a consistent flow of eighth and sixteenth notes provides the underpinning that allows the listener to maintain a degree of rhythmic stability. However, once again, the established meter, and any expectation associated therewith, serves as a means of compositional organization and shifts frequently throughout the section, as dictated by the motivic material, in this case, the fugue’s countersubject. Instead, the onset of bass notes denotes the beginning of each new phrase, each of which varies in length and therefore remains unpredictable from a larger rhythmic standpoint.
Figure 26: *Allegro con spirito* – Measures 55-59

Bass notes denote phrase onsets.

Meter begins shifting.
The fourth movement ends with a final example of the various means by which Barber disrupts metric expectations throughout the sonata, including a focus on pulse rather than meter, as well as the use of cross-rhythms (Figure 27). In the following example, the designated metric markings once again serve an organizational rather than a structural role. Instead, the momentum of the piece is propelled by surges of accents, first in the right hand, then in the left hand.

In this final reference, the subject appears in the right hand in even quarter notes in measure 134 in cross-rhythm with the left hand. In addition, the subject here includes none of the ties or accents so prevalent throughout the rest of the movement, a violation of the rhythmic expectations established at the beginning of the movement and reinforced throughout most of the movement. Instead, beginning in measure 131, the left hand supplies the forward pulse through two recurring accents.

The movement ends with two additional unexpected rhythmic nuances, the accent in measure 145 and the *sforzando* dynamic marking in measure 146 on the final note of the piece. Both of these nuances occur in weak structural locations and represent a violation of significant traditional rhythmic expectations, particularly since this material concludes the entire sonata.
Figure 27: Allegro con spirito – Measures 131-146
Rhythmic Disruption through Syncopation and Accent Placement

In addition to metric disruption, the sonata presents many examples of how various compositional devices are used to disrupt the rhythmic underpinning of the sonata in a more persistent manner than that practiced in previous centuries. Ties are one of the predominant means by which Barber creates syncopation and disturbs rhythmic expectations throughout the sonata.

The ties at the beginning of the first movement are particularly effective as a disruptive device since the tied notes in the melody occur on what are usually strong beats within the traditional metric hierarchy, in this case, the third beat of each measure (Figure 28). The ties weaken the perception of arrival that usually accompanies the onset of these metrically strong beats, further undermining the metric framework and further reducing any conventional expectations associated therewith. Compared to that of the first measure, the tie in the second measure is even more potent in this respect since it applies to both hands instead of the right hand only and no new notes are struck on this beat.

Figure 28: Allegro energico - Measures 1-2
Later in the first movement, the use of ties as a means of syncopation reoccurs in the transition leading into the development (Figure 29). This return provides a marked contrast to the second theme that immediately preceded it, a theme that is rhythmically smoother and more stable and included only a hint of the jagged, syncopated feeling of the first theme. The transitional material includes myriad ties, some of which are unsupported by other content and undermine a strong sense of pulse, as is the case in measures 36, 38, and 39. This feeling of uncertainty is heightened yet further by the frequent shift in meter, the use of accents, and the lack of a clear melody, aside from a brief reference to Theme 2 in measure 37.

Figure 29: Allegro energico - Measures 35-40
All of these factors violate traditional expectations in a more disruptive way than Common Practice compositions; however, the temporary nature of these examples and the consistent return to sections of predictable, rhythmic material reflect Barber’s commitment to historical practices, as well as the modern influences of his time.

Other interesting examples of syncopation occur within the fugal writing of the final movement. By design, fugues have an inevitable rhythmic quality that is very predictable. Barber’s fugue largely adheres to this tradition but does so in a uniquely modern way that challenges some of the rhythmic expectations of the Common Practice Era.

At the beginning of the fourth movement, the subject of the fugue introduces the syncopation that pervades much of the movement. While the rhythm of the subject is highly predictable, it is initially perceived as somewhat irregular due to Barber’s strategic placement of ties and accents, both of which generate syncopations and disturb the otherwise even sixteenth notes that make up the subject.

The initial syncopations occur twice in measure 1, first on a sixteenth note F and second on a sixteenth note E, and in the same places rhythmically in measure 2 (Figure 30). These ties have less of an impact on the meter than those at the beginning of the first movement because they fall in structurally weaker places, the second and fourth beats of each measure. However, within the greater context of near continuous sixteenth notes, their presence still serves as an interruption to the overall rhythmic trajectory of the subject.

The syncopation created in the first two measures is heightened by the accents on C-flat and B-flat in measure 3; these accents fall on beat one and the second half of beat
two, neither of which match the rhythmic emphasis of the first two measures. These accents seem somewhat random at first glance, but highlight the two notes of motive from the first movement, a topic that will be discussed in further detail later in this paper. While further iterations of the subject establish these irregularities as a jazzy undercurrent, the strength of the syncopations in the initial presentations generate ambiguity and leave the listener in need of further iterations of the subject to confirm that these irregularities are in fact predictably reoccurring.

Figure 30: Allegro con spirito – Measures 1-4

Although the initial instability of the subject is mitigated through insistent repetition, thereby conditioning the listener to its rhythmic idiosyncrasies, Barber continues to find ways of interrupting the established rhythm and acknowledging the modern era in which the piece was composed. He accomplishes this by further exploiting the traditional expectations of strong and weak beat placement, as well as interrupting or augmenting the rhythmic emphasis of the subject.
In addition to the predictable accents in the subject, Barber also makes effective use of accents to reinforce or disrupt important metric positions or to invigorate the near constant stream of sixteenth notes throughout the piece. As shown in Figure 31, the left hand accents on the second and fourth beats of measures 38 and 39 coincide exactly with the silent half of the tied notes in the right hand. This unexpectedly stresses the metrically weak positions of beats two and four and creates an alternate rhythmic focus that plays off the ties in the right hand presentation of the subject.

Figure 31: *Allegro con spirito* - Measures 37-40

Another example of accents used in this way occurs in Figure 32, where the strong rhythmic pattern in the left hand of measure 50 is interrupted by double accents in the left and right hands in measure 51. Once again, the accents temporarily destabilize the pulse but are fleeting in nature and serve as a means of stimulating the listener’s ear.
and adding interest to the sixteenth notes to which the listener’s expectations have been conditioned.

Figure 32: Allegro con spirito - Measures 49-52

The Role of Rhythm in Motivic Development and Transformation

Another important aspect of the sonata in terms of rhythmic expectation is Barber’s use of rhythm as an element of motivic transformation. While the use of motives occurred well before the modern era, this particular motive represents extreme economy of means, consisting of only two notes outlining a minor second. In addition, Barber developments the motive rhythmically in ways that are highly transformative, representing the more radical aesthetic of the twentieth century and pushing the boundaries of perceptual abilities and expectations.
In the first movement, Barber establishes the motive with such clarity and insistence that it becomes a kind of schematic reference. However, while the motive is highly recognizable from the standpoint of cognitive expectation throughout the first movement, Barber’s treatment of the motive becomes increasingly more obscure as the sonata progresses. The melodic content of the two-note motive remains the same in each movement; however, the rhythmic placement of the motive within the greater context of the phrase radically alters the overall accessibility of the motive, heavily disguising it by the fourth movement. The following analysis will identify the motive, discuss the various rhythmic transformations to which the motive is subjected, and also investigate the extent to which these transformations defy traditional rhythmic expectations.

The opening two-note motive of the first movement is important and identifiable both in terms of its melodic contour and its rhythmic pattern (Figure 33). The two-note motive outlines a descending half step and is initially stated in measure 1 of the first movement; the right hand carries both the melodic and rhythmic components of the motive that moves from C-flat to B-flat. The associated rhythmic content of this two-note pattern is originally comprised of a sixteenth note and a dotted eighth note, respectively.

Figure 33: Allegro energico - Measures 1-2
This dotted rhythmic pattern saturates the opening texture of Theme 1, as noted in the previous section on metric disruption. While the opening motive remains consistent enough through the first movement to serve as a schematic reference of sorts, its rhythmic transformation begins almost immediately in the first movement, thereby interrupting the expectations already associated therewith and foreshadowing the greater transformations to come in subsequent movements. In the opening measure of the first movement (Figure 34), the note values associated with the C-flat and B-flat are short to long: a sixteenth note followed by a quarter note tied to a dotted eighth note. However, in measure 5, the note durations are reversed from long to short in the higher voice of the right hand; the C-flat is a dotted half note that moves to a B-flat quarter note. Within this same measure, the original rhythm is reiterated in the lower voice of the right hand, also using the original notes, C-flat to B-flat.

Figure 34: Allegro energico - Measures 3-5

Although reiterated aggressively in the first movement of the sonata, the motivic reference in the second movement is much more disguised and therefore very difficult for the ear to discern, even more so since the second movement is in a different key - G major. In measures 1 and 2 of the second movement (Figure 35), the motive appears in enharmonic equivalents: a dotted quarter note B in the first measure moves a half step
down to the quarter note A-sharp in the second half of the same measure. The fact that intermediary notes separate these two notes makes it very difficult to discern them as the motive. However, an analysis of the score shows that their intended importance is unmistakable. Throughout the movement, these particular notes consistently appear with double stems, highlighting them from the surrounding array of eighth notes. The prominence of these two notes is further demonstrated by the fact that both notes fall on the strongest beats of compound duple time. Furthermore, this iteration of the motive recalls the dotted rhythm from the first movement, although the note values feel much more equal in this case due to the quick tempo of the movement that largely prevents the eighth note rest after each A-sharp from being perceived as such.

Figure 35: Allegro vivace e leggero - Measures 1-4

A stronger, yet still fleeting, reference to the motive appears later in the movement beginning in measure 103 (Figure 36). In this instance, the motive is respelled in its initial form, C-flat and B-flat. The notes are immediately adjacent and begin on the downbeat of the measure, making the motive more readily identifiable. In addition, the initial slur on these notes extracts them further from the more staccato articulation of the
surrounding texture. Furthermore, the note values in this particular iteration of the motive are equal in length as opposed to the dotted rhythm from the opening of the movement.

Figure 36: *Allegro vivace e leggero* - Measures 99-108

![Musical notation image](image)

The motivic element that appears in the first two movements of the sonata carries through into the third movement of the sonata (Figure 37). In this movement, the motive first appears in measure 3: the right hand begins the melody on a B-natural and moves through a series of connecting notes to A-sharp, thus completing the descending half step motive. These two key melodic notes are emphasized rhythmically through the use of longer note values, ties, repeated notes, and the fact that the B-natural is the first note of the melody. Variations of this melodic figure occur repeatedly throughout the third movement; however, the original rhythm and juxtaposition of these two notes has been transformed so radically from the first movement that the motive itself is almost
unrecognizable, even though it contains the same two-note melodic content. This remains true from an auditory standpoint of expectation, even with a precise awareness of the above information.

Figure 37: Adagio mesto - Measures 1-3

Despite the rhythmic ambiguity of the motive in the opening of the third movement, Barber provides enough supporting information to demonstrate his intentional, albeit oblique, use of the motive in this movement. This support occurs in the bass in measure 7 (Figure 38). The measure begins on an octave on A-sharp and moves to an octave on B-natural, presenting the motive in inversion and also hearkening back to the same rhythmic presentation of the motive at the opening of the first movement. The iteration of the motive in measure 7 is very clear from a visual analysis of the score but is much more vague from an aural perspective due to the intervening notes that occur between the striking of the A-sharp and B-natural, as well as the time that elapses between the two notes (Figure 39).
Barber further stretches the rhythmic presentation of the motive in the third movement during the second half of the climax (Figure 40). In this instance, the motive occurs in the left hand and maintains the inverted contour. However, the motive has now been extended over three measures: the A-sharp appears insistently in the left hand during measures 26-27, then finally resolves to B-natural when the material from the A section returns in its prime form in measure 28.
Figure 40: *Adagio mesto* - Measures 26-29
The final movement of the sonata contains references to the motive but its appearances are even more infrequent and less obvious than in the second and third movements. Once again, Barber recalls the two notes of the motive, this time in the original key from the first movement, E-flat minor (Figure 41). Barber calls attention to the motive’s content, C-flat and B-flat, by placing accents over these notes in measure 3 in the opening presentation of the subject. Without these accents, these two notes would blend into the surrounding texture and their motivic importance would be lost, both during analysis of the score and in the ear of the listener.

Figure 41: Allegro con spirito - Measures 1-4

![Allegro con spirito - Measures 1-4](image)

The obscurity of the motivic reference in the fourth movement is compounded during onward entrances of the subject. In the second entrance of the subject in measures 5-6 (Figure 42), Barber includes accents in the same rhythmic placement as the initial iteration of the subject; however, the notes in the second instance are not the same as the
original motive – F and E-flat instead of C-flat and B-flat. In addition, this second set of accents outlines the interval of a major second instead of a minor second. While this departure is necessary due to fugal construction of imitation at the interval of a fifth, it nevertheless plays into the further disintegration of the motive’s clarity over the course of the work.

Figure 42: Allegro con spirito - Measures 1-4

Same accent placement on non-motivic notes.
Chapter 7: Conclusion

Drawing from the broader field of cognitive study, the foregoing examination explored the application of expectation theory to an important twentieth century composition, Barber’s Sonata for Piano. Expectation theory provides an interesting methodology for approaching the analytical process. Whereas traditional analysis focuses almost exclusively on the musical text, expectation theory explores the dynamic between performance and audience. In the case of Barber’s Sonata, it serves as a guide for categorizing the various complexities of the sonata while simultaneously acknowledging the impact of these compositional choices on the cognitive expectations of the modern listener.

The study first examined the fundamental precepts of expectation theory, exploring the various ways in which schemata direct the cognitive process by generating expectations based on experience and exposure to recurring events. The study then applied these cognitive principles to rhythm, outlining the traditional means by which rhythm is established and examining the key ways in which expectations can be interrupted through the more radical application of rhythmic nuances such as delay, disruption, and development.

Having established these foundational elements, the examination turned to the subject of modernism, reviewing the work of progressive composers in dissolving the musical traditions of previous centuries and establishing a more radical dialect. Within this larger context, Barber’s work as a more centrist composer became evident through subsequent analysis of the sonata. This analysis simultaneously illustrated how Barber
moderated the perceptual challenges of modernism by alternating between contrasting norms of conventional and contemporary compositional practice.

Within the familiar structure of sonata form, Barber wrestled with this conundrum by juxtaposing pervasive examples of metric ambiguity and rhythmic complexity with sections of more traditional stability and clarity. Oscillating between these distinct musical dialects, Barber highlighted the modern relevance of historical practices but frustrated their traditional application, referring instead to the progressive rhetoric of modernism and incorporating it insistently throughout the sonata in ways that were increasingly transformative.

The use of rhythm as a means of motivic transformation served as Barber’s most thorough acknowledgement of the modern aesthetic. As illustrated through the preceding analysis, Barber consciously and systematically altered the rhythmic framework of the motive, obscuring its original content through a range of rhythmic distances and placements and concealing it in the surrounding texture in ways that were often indistinct to the point of perceptual abstraction, resulting in a loss of cognitive expectations.

The cumulative examination of these topics illustrates Barber’s approach to a world that was increasingly complex, unpredictable, and diverse, providing his audience with the opportunity to grapple with these same challenges. While this analysis serves as a preliminary foundation, much remains to be explored in the area of cognitive expectations, particular as relates to twentieth century music. Scientific research is beginning to investigate these topics, gathering empirical evidence for the theories discussed in this paper and promising interesting results in years to come as discovery continues.
Barber’s unique blend of musical styles also serves as an important educational tool for less experienced listeners, bridging the gap between traditional schemata and modern rhetoric. For the lay listener, the sonata provides an opportunity to explore a musical language that may still be largely unfamiliar, adapting and adjusting cognitive perceptions to acknowledge and embrace a musical experience that might otherwise be dismissed as unfamiliar and uncomfortable. For all listeners, Barber’s Sonata, as seen through the prism of expectation theory, demonstrates a unique blend of two distinct traditions and makes a convincing case for the fact that, despite its diversity and complexity, this is music worth listening to.
Bibliography:


