REVEALING STRUCTURAL ASPECTS OF
PAUL HINDEMITH'S SYMPHONY IN B-FLAT FOR CONCERT BAND
THROUGH A MAP: MUSIC ANALYSIS PROFILE

by
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As members of the Document Committee, we certify that we have read the document prepared by Jason Leo Curley entitled Revealing Structural Aspects of Paul Hindemith’s *Symphony in B-flat for Concert Band* Through a MAP: Music Analysis Profile and recommend that it be accepted as fulfilling the document requirement for the Degree of Doctor of Musical Arts

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ABSTRACT

This document presents a music analysis tool which illuminates structural elements of Paul Hindemith’s *Symphony in B-flat for Concert Band*. Designed by the author, this type of visual tool is called a Music Analysis Profile and will henceforth be referred to as a MAP.

This study offers a historical perspective of visual music analysis models, examines the development of the author’s model, and explores an analysis of the Hindemith *Symphony* through MAP examples. This project is designed to enhance understanding and appreciation of this composition in the following contexts: music rehearsals, classrooms, pre/post concert discussions, and performances. In such contexts, the purpose and usefulness of a MAP as a useful tool is exemplified.
I. HISTORICAL PERSPECTIVE OF VISUAL ANALYSIS MODELS

Introduction

Conductors, performers, theorists and educators have many approaches to score study. Some of them present and reinforce their understanding of music by marking scores while others transfer their analysis of musical elements onto a chart, linear graph, or other schematic. Identifying musical elements through thorough analysis facilitates the understanding of a work’s design. Over time, various models have existed to capture an array of musical components in a format that is accessible to musicians, theorists, and conductors. The author’s model integrates a variety of analytical perspectives, which is the impetus for this project. The examples that follow are past analytical models that relied on technologies of their time, from simple score marking to more sophisticated measurements. Additionally, the historic progression from methods incorporating music notation to those utilizing scientific and graphic abstracts is represented below.

Analysis Models

Musicology, as it came to be in the nineteenth century, owes a great deal to notable theorists Gottfried Weber (1779-1839), Antoine Reicha (1770-1836) and Hugo Riemann, Germans who considered theory, pedagogy, physics, and history to be significant individual contributors to the knowledge of the score.1 According to Riemann, a basic examination of music uses the musical score as a “landscape” in which analytic components are visually identified. This type of score marking was used in nineteenth century conservatories and included in texts on theory and form to the present.

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Reicha expanded on the concept of score marking and synthesized elements of thematic and harmonic analysis into a visual model. In Figure 1, Reicha presents his model for rounded binary (A-B-A form), identifying the three parts and their internal structures.2

Figure 1. Visual Model of Rounded Binary Form  A. Reicha

The transition from nineteenth century and early 20th century analysis to more modern approaches is exemplified in the achievements of Heinrich Schenker. Schenker devised an original method of analysis that illustrated how a composer utilizes a fundamental harmonic structure to “compose-out” functional melodic and harmonic material.3 Schenker’s analysis method illustrated a series of layers or hierarchies, reducing a composition from foreground, to middle ground, background, and eventually to its fundamental level, or Ursatz (see Figure 2). As the work is reduced, the analysis eventually outlines the harmonic scope of the piece, in this case: I-V-I.4

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The mid-20th century saw a number of abstract approaches. For example, Millard Liang developed analytic models that excluded music notation altogether. His purely graphic applications (see Figure 3) illustrated a few fundamental elements of music at a time (phrasing, dynamics, keys, texture). In this example, analyzing the first sixteen measures of movement II from Maurice Ravel’s *String Quartet*, Liang used colors to separate the different instruments and lines with dots to define notes and their relative positions.

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intervallic distance. The opening (text box 1 in both figures) illustrates an angular melody in violin 1 over accompanying pizzicato skips in violin II and the viola. Additionally, dynamics, meter, and articulations are occasionally indicated. Figure 3 contains text boxes that correspond to the musical score in Figure 3a.

Figures 3 and 3a. Graphic Model / Score, Ravel: *String Quartet, mvmt. II*  M. Liang
One limitation of Liang’s model is its inability to accurately represent the music through shapes and color. Although there are obvious differences in the levels of the elements described, they exist in free space. Without lines of measurement to gage the analysis data, this two-dimensional display lacks precision to accurately define the music.

Employing measurable graphics in musical analysis quantifies the presented data. The relative differences of elements (dynamics, phrasing, etc.) can be seen over the course of the model. Through the insertion of scalar horizontal and vertical axes (x and y) Thomas Ferguson, a contemporary of Liang’s, illustrated this with greater visual clarity (see Figure 4).6

Ferguson’s rendering, like Liang’s, is also hand drawn, leaving it to potential inaccuracies. For instance, the dynamic fluctuations are loosely aligned with other formal elements of the model (A B A C, etc.). Although this hand-drawn presentation poses visual difficulties, it does exhibit structural design and the incorporation of differing elements of analysis.

A third model of graphic analysis from the 1960s is not only measurably precise in its display of musical elements, but it also represents the work graphically. Douglass Green’s representation of rhythmic crescendos in the Schoenberg Organ Variations (see Figure 5) depicts a single musical element, the rhythmic crescendo, serialized in 20th century music. The horizontal line through the model’s center shows a mirror image of varying degrees of rhythmic intensity within the theme and its ten variations (bottom), divided into three subgroups (top).

Using type-setting equipment, word processing and other computer software applications, one can improve the appearance of previous hand-drawn graphic models and offer more accurate depictions of measurable forces in music. Tables, created with word processing, organize the data in rows and columns, corresponding both vertically and horizontally (see Figure 6). Although this may seem a modest advancement, the use of such technology integrates word processing with that of other media.

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Musician’s use of technological advances in the 1990s continued to diversify the way music analysis was represented. The measurement of acoustic musical forces (frequency, decibel level, duration) opens yet another realm of analytical possibilities.⁹ Evan Jones devised digital maquette boxes in the 1990s that graphically displayed decibel level (volume/intensity), note duration (time), and pitch (frequency), as well as featuring a playback component of the music (Figure 7).

In Figure 7, the x-axis is time (seconds) and the y-axis is frequency (Hz). Jones’ model of Stockhausen’s Studie II divides four electronic parts from bottom to top. The note lengths vary, as do their respective frequencies over the course of time. According to the display, there is a considerable amount of pitch bending and sound decay in this composition.

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In terms of measuring the forces of music and accurately depicting them as a visual representation, this the most precise analysis model thus far. The model was produced by specialized devices measuring different acoustic elements of music (frequency, intensity, and duration). However, the maquette boxes do not define form, key, instrumentation and other elements (beyond acoustics) that are essential to understanding a composition.

There are a great variety of visual methods, some examined in this chapter, through which theorists have chosen to represent analyzed music and its elements. As seen in Figures 5-7, advances in computer technology have enabled the creation of more precise analyses over time.
The author’s intent, in forming his own model, was to incorporate features from previous visual analytical methods while addressing those models’ strengths and limitations. The author’s final model contains corresponding graphics that are designed and layered with digital drafting programs and other software (Quark, Paint, Flash). These visual editing and animation software enabled the author to create highly detailed analyses that capture elements of musical form and structure. Figure 8 is an example of the final version of the author’s analytical model which developed from 1997 to 2007.

Figure 8.  MAP 2007  Hindemith: Symphony for Band, mvt. I  J.L. Curley
MAP History and Development

The author’s interest in designing and developing the Music Analysis Profile grew out of years of observation of and participation in instrumental and choral ensembles. From a performer’s standpoint, more exploration into the formal elements of the works being rehearsed and performed could have contributed greatly to one’s understanding and appreciation of the repertoire. It was from this perspective that the author researched and developed an alternate model of musical analysis, one that would benefit both conductor and performers alike.

The first iteration of such an analytical model was a system called Mind Maps. (see Figure 9). Elements of music (dynamics, rhythm, harmony, melody, and form) were analyzed and charted by hand on one piece of paper. While this approach was successful in visually capturing musical elements as they unfolded in a composition, improvements were needed.
At the second stage of development, the Flow Chart (Figure 10) focused on the division of melodic material into tempo, rhythm, voicing, phrasing, dynamics, etc. As with Mind Maps, Flow Charts also traced the basic, skeletal form of the music. The inclusion of tonal and textural shifts as well as graphic representations of dynamic levels greatly increased the amount of detail the analysis could provide. While this model was superior to Mind Maps, it could not capture the overall structure of the work studied. Further analytical dissection resulted in a third model (see Figure 10).

Figure 10. 2000 Flow Chart  Scott Prebys: Festival Overture  J.L. Curley

The Flow Chart in Figure 11 represents further refinement of previous models. Through further refinement of the visual presentation and the use of word processing, the model that emerged focused on the elements of form, texture, and dynamics. The 2001 Flow Chart was designed using common analytic terms, colored lines to indicate texture ( instrumentation), all presented on standard-sized paper (8 ½” by 11”).
Figure 8 (page 19) is an example of a MAP created in 2007. This version resembles the 2001 Flow Chart in many ways, but the 2007 model was digitally constructed using current drafting programs (*Illustrator*) which corrected alignment flaws in the hand-rendered version. The analytic components were presented in a more logical sequence, as well: for example, dynamics reside below the headers, followed by phrasing, themes, section divisions, keys/relations, and measure numbers. The 2007 MAP was also improved through digital enhancement: Graphic components (phrase patterns and dynamics) were drawn in high pixel resolution to enhance clarity, which symbolically represented themes, keys/relations, and measure numbers.

The analysis components of the 2007 MAP correspond both horizontally and vertically, reading from left to right, and proportionally related, in number of measures, to the overall length of the movement. When combined, the components also align vertically, as in a musical score. This model has the ability to show smaller structures (phrasing, grouping, theme areas) as well as larger structural divisions (transitions,
codettas, etc.). The combination of both horizontal and vertical axes could provide a clearer identification of large scale musical form (e.g. sonata-allegro, minuet/trio, etc.).

One of the unique highlights of the author’s 2007 MAP is the integration of audio playback and an animated scrollbar. These two components reinforce the graphic analysis by creating a real time alignment of the visual and aural aspects of the work.\(^\text{10}\) Interactive controls were created for the user to navigate the new MAP. Icons (stop, play, pause, forward) activate the scrollbar and playback options, enabling more user-friendly access to any part of the model. The user gains the ability to select or hide the different graphic layers and thus can view the analysis in multiple configurations. With these options a MAP user may choose to play the music and scrollbar in the middle of a work while viewing only a few elements. For example, dynamics and phrasing could be revealed while keys and themes are hidden. Isolating the elements in this fashion allows multiple perspectives in understanding a composer’s work.

\(^{10}\) See Appendix.
II. DESIGN

MAP Components

This chapter examines MAP components and their functions, both individually and cumulatively. Understanding how a MAP is constructed is the key to its implementation in either a classroom or rehearsal setting. Each component will be defined and identified in context in order to reveal a MAP in its entirety.

The first step in creating a MAP is to thoroughly analyze the work to be studied, research the secondary literature for other analyses, and compare known analyses in order to come to one’s own analytical interpretation of the piece. Once research and comparative analyses are finished, graphic components may be created, beginning with a series of standard background elements. Standard components of a MAP form a template, which appear in Figure 12 which appear upper right, counter clockwise:

(a) a header, including author, date and playback controls,

(b) title of the work, movement and/or opus number, composer, and dates,

(c) a formal summary with major sections defined (i.e. intro., expo., dev.),

(d) identifying labels (dynamics…measures) along the left margin,

(e) an explanatory key long the bottom for abbreviations.
At the bottom of a MAP, measure numbers are grouped to indicate phrases and other sectional division (see Figure 13). These numbers are displayed horizontally; and, like other MAP elements, correspond vertically to the structure of the musical work. Including the measure numbers creates a crucial reference to measures in the score and to the various analytical components of the MAP.
The harmonic structure is displayed above the measures with key names and their harmonic functions above the measure numbering. Standard Roman numeral analysis is used to indicate the harmonic structure (see Figure 14).

Figure 14. Keys and their Function

The uppermost graphic component is the dynamic contour. Along the left margin, the dynamic scale, indicated along a continuum, serves as reference to dynamic levels from soft to loud (pianissimo to fortissimo). Phrasing and large-scale formal elements are displayed directly below the dynamic contour and correspond to other components. (see Figure 15). Figure 15a illustrates the placement of the dynamic contour in relation to keys/function as they are found on a MAP.

Figure 15.  *Symphony for Band: mvmt. 1, Dynamic Contour*
Phrasing is the basic grouping of melodic and thematic material. The phrasing graphics are diamond-shaped and divided according to the length and type of phrase or fragment: antecedent or consequent. The phrases are grouped based on thematic relationships. The figures below show a pair of phrases (16a), and a parallel period (16b), two like sets of antecedent/consequent phrases. Once they are identified with related thematic material, the phrases may be grouped by a larger-scale bracket (16c).
Color and shape are an integral part of MAP design in that they distinguish phrasing, form, and thematic materials in the analysis. MAP color codification clarifies the overall form of the piece. As characteristics of the music change (textures and themes, primarily), so do the colors, which are chosen subjectively; transitions are in gray, codas are in black, for example. Other colors are chosen to represent and differentiate contrasting themes. The resulting palate of related and contrasting colors may be observed over greater distances of time, especially regarding reoccurring materials.

Musical phrases are represented by diamond shapes (Figure 17a) which are assigned colors to correspond to related melodic materials (Figure 17b). As colors are assigned by the analyst, the phrases are grouped into periods and other formal divisions (Figure 17c); this was illustrated earlier by Figure 16. Smaller divisions are bracketed into larger sections, revealing the final structural layer of the music’s form (Figure 17d).

Figure 17a-d. Progression of Phrasing and Color Assignment
Thematic material is labeled with analytical abbreviations, displayed in the table below. These abbreviations and symbols are inserted within the phrase and section divisions, corresponding with themes that progress throughout the work (see Figure 18).

<table>
<thead>
<tr>
<th>T1, T2, T3</th>
<th>~</th>
<th>RT</th>
<th>CT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theme areas 1, 2, and 3</td>
<td>Transition, Retransition</td>
<td>Closing Theme</td>
<td>Coda</td>
</tr>
</tbody>
</table>

Large scale form is revealed by correspondence of colors from section to section, here labeled exposition, development, recapitulation (see Figure 19). In this case, colors used to indicate related thematic material in the exposition and recapitulation. A completed MAP illustrates large and small scale formal similarities and differences through use of like and contrasting colors.

Combining the dynamic contour with the grouped, color-coded phrasing illustrates one cumulative effect of a MAP. The presentation of all graphic and analytic components (see Figure 20), along with the header and labels, reveals the complete MAP of the first movement of Hindemith’s *Symphony*.
Each analytical element of a MAP is displayed on the background template. The elements are aligned from top to bottom, reinforced by a hash mark just below the dynamic contour that indicates divisions of form with corresponding measure numbers. Such visual markers are as critical to MAP users as are the lines of longitude and latitude to a navigator; these markers allow an accurate identification of relationships between components.
Activation and Playback Buttons, Scrollbar

The text boxes along the left column of each MAP are more than mere labels, they are activation buttons. By selecting their corresponding buttons, Dynamics, Phrasing, Themes, and Keys/Relations may be shown or hidden. This MAP feature is activated by clicking, so the user may select components individually or in combination (see Figure 21).

Figure 21. MAP Activation Buttons (displayed horizontally)

By selecting various combinations of components (e.g. dynamics with phrasing and key centers) relationships may be revealed that would otherwise be overlooked by a printed score. Visually presenting the composer’s large scale ideas results in an accelerated grasp of the music’s complete form. Further MAP exploration will reveal the many facets of the work.

The final MAP components are a sound recording of the analyzed work and a vertical scrollbar. The control icons for playback are activated by clicking on each icon (see Figure 22). Additionally, the computer’s mouse may be used to advance the scrollbar and music to various points in the analysis.

Figure 22. Playback Control Icons: Tab, Pause, Stop, Play
Figure 23.
Scrollbar Alignment with Horizontal Components

The scrollbar is activated by the playback controls and moves across the graphic components (dynamics, phrasing, and themes) in sync with the recording. A user may tab forward to various points on the MAP, press the play button and engage playback and the scrollbar. Figure 23 is an excerpt from the exposition of the first movement of Hindemith’s Symphony. This vertical scrollbar allows the user to better see the precise alignment between horizontal components of the analysis.

The features discussed to this point are standard on any MAP. However, it is sometimes necessary to supplement a standard MAP to clarify characteristics unique to individual compositions. For example, Hindemith’s Symphony contains multiple themes, some of which are layered. In a MAP this is represented by a division of the overlapping themes along the horizontal axis within the phrasing component (see Figure 24).
MAP Functions

A MAP can be presented in three forms: as a complete analysis, as a multi-layered analysis, or as a media presentation. As a complete analysis (Figure 21), a MAP presents all components exposed simultaneously. This creates a bird’s-eye view of the work and reveals its formal architecture. Phrases are identified by shapes proportional to their length, colors differentiate themes, and keys and theme areas are labeled with common analytic terminology.

As a multi-layered analysis (Figures 12-20) a MAP illustrates analytical components in different combinations. By engaging or hiding components, varying perspectives of the work emerge. As a media presentation, all analytic components are shown and reinforced by an accompanying sound recording and the scrollbar. Playback and scrollbar applications enable MAP users to engage both aural and visual senses. When a MAP is implemented in the above listed ways, it facilitates a deeper understanding of the music.
III. IMPLEMENTATION

Introduction

There are multiple ways in which a MAP may be used to better understand a composition. The project model serves two primary purposes: first, displaying music components on a large scale to visually synthesize an analysis, and second, demonstrating the visual analysis and its interactive components. MAP users may include conductors in score study, ensembles in rehearsal, student-conductors, and other interested users and audiences.

Score Study Supplement

A MAP may be useful to conductors in that it provides a bird’s-eye view of the overall shape and proportion of the music’s structure. A conductor may either use an existing MAP or create one of their own. As a supplement to individual score study, one can transfer data from a MAP into their score, contributing to more in-depth study. These applications would be particularly useful to student-conductors, providing a means for accelerated score-study which may facilitate more effective rehearsal planning and thus performance goals. Conductors may cross reference their own analyses with that of a MAP to further clarify or deepen their understanding of a piece.

Transferring MAP data into a score is intended to encourage conductors to study the elements of music in greater detail. For instance, after entering the key changes from a MAP to the score, modulations, cadences, and other elements of the work’s tonal center could be revealed. The same would apply to phrasing and theme areas. Each theme,
assigned on a MAP with colors and symbols, can be identified in the score with its corresponding melodic material. Once identified, the contour and characteristics of the melodies can then be examined in more detail. Referring to a MAP as an aid to understanding the architectural framework of a composition may accelerate a conductor’s study and preparation of the score.

Ensemble Exercises

MAP application does not end with score study. When a conductor is more familiarized with the technical preparation, language, format, and variety of MAP presentations, the tool may be applied to teaching formal and harmonic aspects to ensembles and students. Using a MAP in rehearsal can be an effective means for bringing musicians closer to understanding the compositions they will perform. With efficient lesson planning, the conductor may integrate a MAP into rehearsals for this purpose. It is recommended that a conductor make judicious use of the tool. Consideration of rehearsal time, programming needs, and concert schedules may limit the time a conductor can apply the tool during rehearsals. However, successful integration of a MAP can potentially accelerate mastery and enable more efficient use of rehearsal time.

An ensemble’s ability to identify discrepancies between a MAP and their performance may enhance their development as individual musicians. A conductor may record the ensemble and play it for the musicians while the MAP is projected and the scrollbar is activated. To develop self-criticism and interpretation, the conductor could then pose the question: *Do you hear what you see?* By critiquing their performance,
comparing it to the model, and making interpretive musical decisions based on those comparisons. An ensemble may find its knowledge of the composition greatly expanded and the performance of the piece improved. MAP application over time may develop self-critical musicians who are able to make well informed, interpretive decisions.

Other Applications

As with conductors and ensembles, this tool could impart knowledge of musical form to audiences. A MAP may provide audiences with further insight into the music they hear before, during, and/or after a performance. In a pre-/ post-concert discussion, a MAP could supplement program notes. Revealing the underlying structure of musical works may help audiences to better appreciate compositions and their performances.

MAP applications examined here – score study supplement, ensemble/ classroom instruction, and other uses– illustrate its diversity in multiple settings. The ever-evolving technologies will enable further refinements and practical uses of the tool. The development of a primer for new MAP users may increase its accessibility and effectiveness.
IV. ANALYSIS OF HINDEMITH’S SYMPHONY THROUGH MAP EXAMPLES

Hindemith and the Symphony

Like many early 20th century composers, Paul Hindemith’s music is influenced by several styles. The majority of his works feature a modernist language of tonal ambiguity. Additionally, he incorporated elements of the Baroque and Classical eras (sonata, song-form, fugue), as did many Neo-Classical composers such as Igor Stravinsky, Maurice Ravel, and Aaron Copland. In his Symphony for Band, Hindemith utilizes thematic layering, asymmetric phrasing, fugue and sonata-allegro form, and a distinct tonal language.11 This composition was completed in only a few months and premiered on April 15, 1951 by the United States Army Band, for whom it was commissioned, with the composer conducting.12 It has become part of the established repertoire for the American wind band.

As a notable teacher and composer, Hindemith was particularly attentive to structure in his use of sonata form in the first movement of this piece, having used his own works as classroom models. The Symphony’s insistent tonal cadences, along with dynamic and thematic shifts highlight the structural divisions of form.13 Hindemith’s individual approach to form in the three-movement Symphony will be illustrated with the following examples.

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Mapping the *Symphony*

An important goal of this analysis is to demonstrate the potential of a MAP as a visual representation which, when coupled with audio playback, allows one to truly “see the music.” The analysis, represented in the MAP design discussed in Chapter III, is cross-referenced with previously published analyses of the *Symphony*. The resulting analysis is the author’s and is by no means the definitive analysis of this work, though it is a synthesis of multiple theoretical interpretations. Through several examples, each movement of the *Symphony* will be explored as a means to exhibit the potential of a MAP as an analytical tool. Through this process, several conclusions will be reached regarding compositional aspects of the entire three-movement work.
Movement I:
Moderately Fast, with Vigor

Summary:
SONATA FORM

A. Exposition: T1, T2, T3
   ~ Exposition
   B. Development: Fugue
   ~ Retransition
   $A'$ Recapitulation: T1+T2, T3
   $\varnothing$ Coda

Moderately fast, with vigor.
Movement I of the *Symphony in B-flat for Concert Band* is cast in sonata-allegro form. It employs a fast tempo, themes in tonic and dominant keys, a lengthy development of thematic material, and a recapitulation of primary themes following the development. A formal synopsis of this movement is indicated on the upper left corner of the MAP.

The thematic and harmonic relationship of the exposition to the recapitulation is a defining characteristic of sonata-allegro form. As expected with this form, the recapitulation is a restatement of materials presented in the exposition. Hindemith’s approach differs in his use of phrasing, theme areas, dynamics, and keys in the recapitulation contrasts that found in the exposition. This MAP provides a visual reference that explicates the relationship between exposition and recapitulation. Cropped from the complete MAP of the first movement, Figure 26 isolates dynamics, phrasing, and themes. Color patterns and labels distinguish themes 1-3.

Figure 26. Movement I, Exposition: Dynamics, Phrasing, Themes
The exposition of the *Symphony* opens at a *forte* dynamic with Theme 1 in the key of B-flat major. Theme 1 is presented twice: first, as a seven bar phrase by trumpets and second cornets and, as an eight bar phrase by upper woodwinds (see Figure 27). This angular, expansive theme, which includes rising and falling fourths, fifths, and sevenths is also rhythmically complex, featuring both duple and triple eighth note lines. When Theme 1 reappears, its consequent phrase is extended and escalates into a two bar transition where the full ensemble is heard at *fortissimo*. When isolated from the larger MAP (see Figure 27a), Theme 1 is visually simplified as a parallel period.

Figure 27. Movement I, Theme 1, mm 1-11, trumpets and cornets  P. Hindemith

Figure 27a
Movement I, Theme 1
Parallel Period
As Figure 27a illustrates, Theme 1 is stated twice, with an extended second statement. This extension of sequential, descending, wide interval motives is paired with triplet eighth notes in the woodwinds and a six measure crescendo, which propels the music toward the first climax of the movement (see Figure 27b).\(^\text{14}\)

Figure 27b.

*Symphony for Band*, mvmt. I, Theme 1b, mm. 19-21, woodwinds  P. Hindemith

A five-note source motive is identified by the tuba in measure 1 (see Figure 28). This motive surfaces throughout the work, and is the source of all melodic material for the *Symphony*. In measures 4 and 5, for instance, Theme 1 represents the source motive in retrograde (see Figure 27).

Figure 28.

*Symphony for Band*, mvmt. I, Source Motive, m. 1, tuba  P. Hindemith

\(^{14}\) Paul Hindemith, *Symphony for Band in B-flat major*, Schott, Mainz, 1951/1979, 7.
After a short introduction of tremolos in the flutes (measures 26-27), the second theme area appears. Theme 2, which is also built upon the source motive, contrasts Theme 1 in a multitude of ways. Due to the softer dynamic, reduced texture, and quick, rhythmic passages, the character of Theme 2 is more intimate and playful (see Figure 29). The initial presentation of tenor saxophone and oboe solos is answered by two other entrances of the source motive (see Figure 29b). Up to this point, Theme 2 material has appeared only in fragments. At this point, the clarinets play the theme in its entirety, an occurrence that is concluded by a five-measure forte passage in the woodwinds.

As expected in traditional sonata-allegro form, Theme 2 is presented in the dominant key of F major. Unlike Theme 1, this theme area is less cohesive due to its interruptions of and extensions in phrasing. A comparison of MAP Figures 27a and 29a (Themes 1 and 2, respectively) reveals their differences.

Figure 29. *Symphony for Band*, mvmt. I, Theme 2, mm. 28-32, oboe

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Theme 3 is played in the subdominant, E-flat major, and contains three, six-measure phrases: one antecedent and two consequents. The first of the three phrases is lyrical, played softly by woodwinds in a low tessitura (see Figure 30, bassoon). The second and third phrases contain accompanying counterpoint in the brass, which crescendos throughout (see Figure 30, horn in F). Based on the phrasing, consistency of melodic material, and steady build up of texture and dynamics, Theme 3 is the most straightforward presentation of the themes heard thus far. When isolated from a full MAP, the phrase graphic of Theme 3 captures its simplicity in comparison to the previous two (see Figures 30a and 26).

Figure 29b.  *Symphony for Band*, Movement I, mm 37-40  P. Hindemith
Abrupt shifts in dynamics within the exposition’s three themes reveal a relationship of intensity levels to form. Hindemith deliberately uses dynamics to mark structural points in the music. To illustrate this point, the dynamic contour of the exposition is isolated in Figure 31. The sudden dynamic shifts identify the exposition’s three theme areas. The beginning and ending of phrases, themes, and major structural divisions are emphasized by crescendos, diminuendos, and silences. The correlation of dynamics to structure is confirmed by viewing the full MAP (see Figure 25).
The exposition ends with a codetta (mm. 69-77) that features brass exchanges of fragments from Theme 1, triplet eighth note passages in the woodwinds, and a bass drum roll. Once again, to build tension and anticipate another significant shift in form, Hindemith juxtaposes fragments of themes with one another while intensifying texture and dynamics (see Figure 32).  

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Figure 32. *Symphony for Band, Movement I, mm 70-73*  P. Hindemith
The development (mm. 78-146), the second section of movement I is a fugue. The fugal exposition begins in the alto saxophones (see Figure 33). Subject material is then passed throughout the ensemble, and later appears in ensuing episodes (see Figure 26). Dotted rhythms permeate this section and are reminiscent of those found in measures 6 and 7 of Theme 1. The contour of the fugue subject is also derived from the source motive (see Figure 33*).

The development ends with a climactic retransition (mm. 147-155) to the recapitulation (see Figure 26). Musical materials of the development are markedly distinct from those of the exposition and recapitulation, thus abandoning the traditional role of the development in sonata-allegro form. Because of its independence, this fugue will become a specimen for comparison to fugues from the third movement, to be discussed later.

The correlation between the exposition and recapitulation are further clarified by the full MAP. Further exploration reveals subtle difference between these two sections. Figure 34 displays both sections side-by-side, demonstrating a variety of discrepancies.
The recapitulation of a standard sonata form generally represents some, if not all, thematic material from the exposition in the tonic key (B-flat major). Traditionally, Theme 1 is in the tonic in both exposition and recapitulation, however presents a different case. When Theme 1 reappears in the recapitulation, it is in the subdominant of E-flat major (see Figure 34). The keys of G-flat (bIII) and E-flat (IV) appear in Theme 3 of the exposition and in Themes 1 and 2 (superimposed) in the recapitulation (mm. 157-184). Ultimately, a remaining sense of sonata form resurfaces when Theme 3 reappears in the tonic (originally in E-flat).

The first movement is comprised of three themes derived from a source motive, presented in the guise of sonata-allegro form. By his departures from expected tonal progressions and a redefinition of internal structural relationships between exposition, development and recapitulation, Hindemith creates a movement which is indebted to traditional sonata-allegro form, yet reinterprets its characteristic roles.
Movement II: Andantino, Fast & Gay

Figure 35
Symphony for Band is comprised of three movements which is atypical of symphonic form. Traditionally, a symphony contains four movements: a fast first movement in sonata-allegro form; a slower lyrical second movement; a dance-like third movement usually in a triple-meter; and a fast final movement. While at first glance it appears that Hindemith’s Symphony is only superficially related to symphonic form, the MAP explorations eventually reveal this work to be a four movement work. To achieve this four movement structure within three movements, Hindemith combines features of traditional second and third movement exemplars by assigning the second movement of the Symphony a dual role. This movement includes two major themes; one is slow and lyrical, the other, a scherzo, thus incorporating features of second and third movements typical to symphonic form.
Figure 36 illustrates the fourth major theme of the *Symphony*: a broad, legato canon between alto saxophone and cornet. Figure 36a is a MAP representation of Part A phrase grouping of the fourth theme. The phrase group, indicated in blue reappears after a short bridge (in gray), and rounded off by a coda (in black).

Figure 36.  *Symphony for Band, Movement II,*  
Theme 4, mm. 1-12, alto saxophone/cornet  P. Hindemith

![Figure 36a. Movement II, Part A, Phrase Group](image-url)

Theme 4  bridge  Theme 4  Coda
Theme 5, which is introduced by a solo clarinet, is lively and imitative, and contrasts Theme 4. The 12/8 meter, sixteenth note arpeggios, bright tempo, trills with crescendos, and dance-like tambourine accompaniment are a stark departure from textures of the previous section (see Figure 37). The relationships of tempi in Themes 4 and 5 is a ratio of 1 to 2. (56 bpm to 112 bpm). The presentation of the thematic material in Part B also follows a similar pattern to that of Part A—theme, bridge, theme, and coda (see Figure 37a).

Figure 37.  *Symphony for Band*, Movement II, Theme 5, mm. 49-51  P. Hindemith

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Figure 38 is a side by side comparison of Parts A and B which illustrates similarities between the two. The formal symmetry is evident in the presentation of each theme twice, the second time slightly truncated. Each section includes a bridge between theme statements, and each is resolved by a coda.

The final section of this movement begins in measure 91 with Parts A and B played simultaneously (see Figure 39). The return of Part A is similar to its original appearance and retains its original tessitura, character, and key (G major), but it is no longer treated in canon. In this third section of movement II, Part B also retains its character, but appears in G major rather than F major, and functions as the restatement of ‘A’ in the rounded binary form. This change in key is necessary to accommodate the layering of the two parts. Like movement I, movement II contains thematic layering, though the preponderance of and relationships among the layers are different from those found in the first movement. In movement I the themes are loosely layered, with little phrase alignment of its themes (see Figure 25, recapitulation); in movement II the intersection of phrase material is more carefully aligned.

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18 Paul Hindemith, Symphony for Band in B-flat major, Schott, Mainz, 1951/1979, 61.
Figure 39.

_Symphony for Band, Movement II, mm. 102-104_  P. Hindemith
The layering of the three sections of movement II (A, B, A/B) is represented in the following MAP reduction (see Figure 39a). Part A/B is placed in the center to show its integration of material from Parts A and B. In the return of the first section, Hindemith utilizes equal length fragments of both theme areas in Part A/B. Through this layering of A and B, the phrasing sometimes aligns and at other times is disjunct.

Figure 39a.* Movement II, Parts A, B, A/B

*The positive (+) symbols represent like material/phrasing between sections.

The negative (-) symbols represent differing material/phrasing.
Part A/B (see Figure 40) illustrates critical points of phrase alignment between parts A and B. The opening period from Part A coincides with that of Part B at measure 91. The transition in Part A and the bridge material from Part B (shaded gray) intersect at measures 111 and 116, respectively.

These points of alignment are crucial to understanding Hindemith’s compositional process of the *Symphony*. The relationship between theme areas is reinforced by the alignment of phrases. The alignment of Themes 1 and 2 in movement I is not as crucial in articulating structure as in movement II. In the first movement, fewer measures feature phrase layering (27 measures or 1/8 of the whole movement), and when layering occurs, phrases are loosely aligned. On the other hand, one third (36 measures) of movement II features more precise phrase alignment in its thematic layering.

Variations of dynamics throughout the movement create dynamic contours that visibly divide movement II into the three parts previously identified (see Figure 41). When comparing Parts A and B, their dynamic contours noticeably different; Part A
remains primarily at a softer dynamic level, while Part B contains a louder, broader
dynamic spectrum. Part A/B contains an array of dynamics, extreme in loud and soft
levels of intensity.

Figure 41. Movement II: Dynamic Contours

The character of themes from Parts A and B and their relationship of phrasing in
Part A/B is Hindemith’s primary focus in movement II. At first glance, the key
progressions are unremarkable. Each section is focused on a single key: Part A in G
major, Part B in F major. The key of Part B is closely related to the tonic of the
Symphony, F major to B-flat major or V - I. However this dominant key it is completely
enveloped by the submediant (G major) of B-flat major, a distant key to F major.
Although the submediant is related to the tonic and a likely candidate for symphonic
inner movements, in this context it bears no functional relationship to F major, other than
linear. Thus, the logic of movement II keys is only evident vis-à-vis the entire work.

The two parts of movement II – (A) Andantino and (B) Fast & Gay—exhibit
distinctly polarized characters and tonalities. In this way, the two parts function as both
the second and third movements of a four-movement symphony. Because of textural
extremes, thematic layering, distant keys, and a dual symphonic role, movement II is a
critical centerpiece of the work.
Figure 42. Symphony for Band, Movement III: Fugue
Movement III, which contains two fugues and a double fugue, can be related to the movement I, whose development is also a fugue. Basic components of a fugue are

- **Exposition:** sequential entrances of the subject on tonic and dominant.
- **Episode:** development of the subject and countersubject.
- **Free material:** shorter developmental sections, bridging episodes.
- **Closing area:** resolution of episodes / fugue.¹⁹

The third movement opens with a nine-measure introduction of Fugue A’s subject. The exposition begins in m. 10 with three subject entrances in cornets, horns, and flutes (see Figure 43) and is followed by two developmental episodes.

**Figure 43.**
*Symphony for Band, Movement III, Fugue A Subject, mm. 10-20, cornets*  P. Hindemith

Episode 1 (mm. 26-40) introduces a countersubject in the horns and free material in the E-flat clarinet, bass clarinet, bassoon, and cornet (see Figure 44). This fifteen-measure section, in three phrases (4+7+4), presents the subject in high (piccolo/flutes) and low (baritone, tuba) instruments, creating a polarized texture.

Episode 2 (part 1) begins with four measures of free material (mm. 41-44) and is followed by the subject in the saxophones. Episode 2 features stretto (staggered) entrances of the subject. Accompanying staccato, quarter note pulses on beats four and one in trombone and tuba provide rhythmic and harmonic support (see Figure 45).

Episode 2 (part 2) begins in m. 54 and transfers the subject to the low brass and the rhythmic/harmonic pulses to the clarinets. This episode climaxes in mm. 59-62 as
brasses, flutes, and piccolo play the subject in stretto at forte, resolving Fugue A with a c-sharp minor chord in m. 66.

The first of two Scherzandi lasts eleven measures (mm. 66-76) in the key of c-sharp minor. Its character is playful (typical of scherzi), featuring soft, eighth note passages in the piccolo and oboe. This is accompanied by unison staccato figures in the other woodwinds and the subject from Fugue A in the alto saxophone (see Figure 46).  

Figure 46.  *Symphony for Band*, Movement III, *Scherzando* 1, mm. 66-68  P. Hindemith

Fugue B begins in m. 77. The subject’s character, key (D-flat major / minor) and textural shift (low tessitura flutes, bass clarinet, bassoon, and trombones) noticeably contrasts elements of Fugue A (see Figure 47). Fugue B also has four distinct episodes. The timpani and tubas echo the accompanying quarter note pulse of the previous fugue (see Figure 45). Episode 4 contains an exchange of subject fragments and serves as a closing section to Fugue B.

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Scherzando 2, mm. 136-146, is in b minor. Like the first Scherzando, this eleven measure passage is soft, rhythmic, and is derived from the subject of the preceding fugue, in this case Subject B. The scherzandi serve as closing areas for Fugues A and B and separate the fugues from each other (see Figure 48).

The codetta (mm. 147-160) utilizes the Scherzando melody (see Figure 46, piccolo) and distributes it among clarinet, flute and piccolo. At this pivotal moment in the finale, dynamics fade to pianissimo, the melody is fragmented, and clarinets and horns sustain F-sharp major and a minor chords, simultaneously. Tapering dynamics and textures along with harmonic tension prepare the arrival of the Symphony’s climax.
Section 3 of movement III (mm. 161-177) begins with a double fugue containing subjects from Fugues A and B (see Figure 49). In this section, each fugue subject is stated three times and loosely aligned to one other (see Figure 49a). Though each subject is passed from instrument to instrument, the dotted rhythm, played by cornets for thirty-seven measures, remains constant. This accompanying rhythm is reminiscent to that of the fugue in movement I (see Figure 25).

Figure 49.
*Symphony for Band*, mvmt. III, double fugue, mm. 161-163  P. Hindemith

Figure 49a.
double fugue:
Movement III, section 3
Movement III, section 3, part 2 continues the double fugue and adds a rhythmically augmented version of Theme 1 from movement I (see Figure 50, trumpets/trombones). This is the climax of the entire work: the texture and dynamics intensify, the counterpoint is at its most complex, and the character marking of *Poco piu largamente* indicates an impending sense of weight to the music. The phrasing of the three melodic ideas in this section does not align. The accumulation of superimposed materials creates a sense of convergence as the work nears its end (see Figure 50a).

Figure 50. *Symphony for Band*, Movement III, section 3, mm. 178-181  P. Hindemith

Figure 50a. Movement III, section 3: Theme 1/Double Fugue
The Symphony’s cyclic nature is reinforced by the appearance of Theme 1 and previous thematic and rhythmic materials in the finale. A complete MAP of the finale (see Figure 42) correlates the double fugue with the Symphony’s most intense dynamic level. Already a heavily developed section, the addition of Theme 1 creates a textural veil of sound. The accumulation of elements coincides with the long-awaited return of the home key, B-flat major, which signals the conclusion of the work. The coda (mm. 206-225) recalls the opening of the piece, featuring staggered entrances of Theme 1 in the brass, running eighth note passages in the woodwinds, and a full ensemble crescendo (see Figure 51).

This analytical discussion and MAP-based exploration of movement III focuses on fugues and their relationship to large scale, ternary form. This movement presents not only a balanced framework (Fugue-Scherzo – Fugue-Scherzo--codetta —Double Fugue--coda) but also the convergence of components of the entire Symphony: dynamics, counterpoint, themes, and texture.
The Symphony as a Whole

Thus far, the methodology has been to isolate MAP components or sections and explore analytical details of the three movements in order to facilitate a general understanding of each movement. Comparing common MAP components of all three movements simultaneously reveals macrocosmic similarities and differences of the work as a whole. Through these comparisons, several conclusions emerge.

As previously discussed, this three-movement symphony functions like a four-movement work, the traditional profile for this genre (see Figure 52). This is achieved through movement II, which functions as both a slow, lyrical second movement and as a triple-metered third movement, dance like scherzo. Each of the three movements is divided into three large sections, with each third section featuring superimposed themes from the previous sections. There are a total of three fugues in the Symphony: one in the development of movement I; the other two in movement III. In the third section of movement III contains two fugues and Theme 1 from movement I presented simultaneously (see Figure 53).

Figure 52.
Complete MAP of Symphony for Band
Figure 53. Movements I, II, III: Phrasing and Sections
The pervasive use of components utilizing three part divisions may have been intentionally used by the composer to unify this work. While these MAP explorations present these occurrences of three, further score study may reveal other instances not found in a MAP. For example, many thematic and structural divisions are preceded by a transitional measure in triple meter (3/2, 3/4, 9/8, or 6/8), which are surrounded by duple meter measures. Quarter and half note triplets appear at these pivotal moments such as in Theme 1 of the first movement and in the subject of Fugue B in the third movement. These details may be discovered within the musical score, the kind of further study that MAP usage is meant to encourage.

Dynamics

As explored MAP-illustrated examples, dynamic shifts are able of indicating structural shifts within musical form. MAP contours of crescendos and sudden shifts to extremes of the dynamic spectrum aid in understanding the analysis of Hindemith’s *Symphony*. This concept of dynamics’ role in defining form may facilitate a better grasp of this composition’s structure.

With the dynamic contours of all three movements displayed, in MAP form, a pattern of intensity levels surface (see Figure 54). Movement I balances its own dynamics with an even mixture of loud and soft. The generally soft dynamics of movement II are counterbalanced by the intensity of the finale, which reaches $fff$ at its extended climax. The shape and form of the music corresponds to these dynamic profiles.
Key Progressions

As a reduction of analytical details from the full score of the *Symphony*, the MAPs are also capable of revealing significant details surrounding Paul Hindemith’s use of tonal language. Throughout the piece, the keys are indefinite, making a harmonic analysis of this music challenging. At times, keys are clearly recognizable by authentic cadences, and each movement of the *Symphony* opens and closes with tonic chords, providing clear points of harmonic reference.

The duration of keys shown on each MAP reveals the tonic of B-flat major and dominant of F major are the tonal framework for the entire composition. The outer movements are particularly centered on B-flat major, while F major dominates middle sections of both first and second movements (see Figure 55).
Other keys play significant roles in this work as well. E-flat major is integral at two pivotal moments. Movement I uses this subdominant function at the end of the exposition, which is typically reserved for the dominant in order to prepare the traditional repeat of the exposition and/or lead into the development. E-flat major also displaces B-flat major in the recapitulation of movement I, where Themes 1 and 2 are layered. The superimposed fugues of movement III are in E-flat major as well. The climaxes of movements I and III, which also feature this key area, are similar in that they both reach a dynamic of fff where thematic layering occurs. G major, a distant yet related key to B-flat major, is used extensively in movement II, which represents a quarter of the entire Symphony.

Overall, this MAP exploration of Hindemith’s *Symphony in B-flat for Concert Band* reveals a musical work that fuses Neo-Classical elements (Baroque fugue, and Classical sonata and rounded binary forms) with those of the twentieth century (tonal ambiguity, asymmetrical phrasing). Examining aspects of this composition through illustrative MAP examples demonstrates both the strength of this analytical tool and the integrity of the piece itself.
V. CONCLUSION

Using a MAP creates an aural and visual interactive experience that synthesizes earlier analytical models with current advancements in technology. Though the strengths a MAP exhibits are geared toward conductors and ensembles, the potential uses for this tool could be far reaching and applicable in a variety of settings – music classrooms, pre-concert discussions, and master classes.

Future study involving multiple ensembles and control groups could further validate this tool’s use as a teaching resource for music analysis. There are several ways in which one could assess the effectiveness of MAP integration into the rehearsal and classroom environment. For example, one could evaluate the degree to which an ensemble retains the information and applies it to performance. The primary mode of assessment would be documenting, through follow-up questionnaires, how ensembles and conductors make use of the MAP, if at all. For this project, however, the goal was to present a MAP, illustrate its versatility, and demonstrate its features using Paul Hindemith’s *Symphony in B-flat for Concert Band* as an example. The intent was that this exploration would provide a means to better understand the work.

A MAP may create a route that enables users to progress from knowledge acquisition (learning) to higher order cognition (thinking). Regardless of the setting, proper use of this tool may create transferrable skills that performers and students may apply to other compositions, thus creating an enhanced perception of music.
APPENDIX

Following a thorough analysis of the score, the original graphic components (dynamics, phrasing/sections) of the MAP were produced on paper. Those hand rendered images were then scanned as a PDF image, and edited in Microsoft Paint. The author was then able to refine and clarify the images’ (then black and white) and “flood fill” specific regions of the graphics, as seen in chapter II.

The graphics created by the author were taken to the former Triestman Center for New Media at the University of Arizona and recreated in Adobe Illustrator. Once they were a perfect match, the images were imported into Adobe Flash (web animation software) and transformed into a background image.

Once in Flash, a soundtrack with animation (scroll bar) was added. Media buttons were linked to each graphic feature and the soundtrack to enable the user/viewer to play the music and read its information as the scroll bar moves along the analysis. The soundtrack is that of the Symphony for Band performed by the University of Arizona Wind Ensemble, under the direction of Professor Gregg Hanson in 2002. The overall achievement is to create a real-time relationship between image and audio.
REFERENCES


