

*An Analysis of Bela Bartok's Polymodal Chromaticism, Compound Scales, and Expanded Tonicity in Chick Corea's Children Song No.10*

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**Abstract**

This study focuses on Chick Corea's tonal expansion method using the theory of polymodal chromaticism by Bela Bartok. Children Song no.10 from the collection of Children Songs, 1984 by Corea is analyzed in this research. Despite the significance of this piece, there exists a scarcity of musical analyses examining the use of polymodal chromaticism as a composition tool in jazz music, suggesting a need for further research in this area. This study uncovers the compositional method and style that Corea uses in applying the theory of polymodal chromaticism. A qualitative framework with a combination of method of music analysis and quasi-Schenkerian music analysis were applied to highlight modal and compound scales, ostinatos, harmonic progression, and compositional techniques Corea uses to expand tonality in the selected piece. The study led to detailed insights into the compositional techniques used to achieve tonal expansion, as well as the discovery of unique compound scales and combinations of scales that led to total chromaticism. The methods of tonal expansion using the theory of polymodal chromaticism are detailed in this study, allowing further exploration of the theory in other areas of jazz and contemporary music.

Keywords: Tonal Expansion, Polymodality, Chick Corea, Jazz Theory

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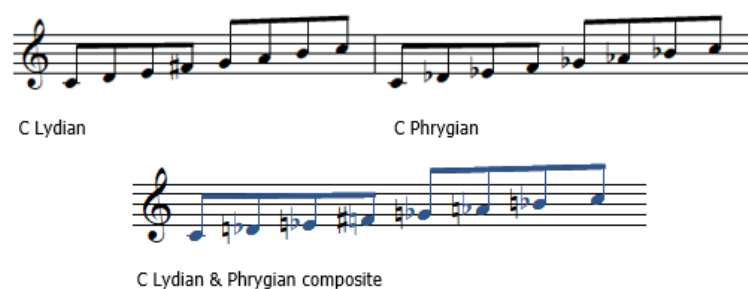
## Introduction

The after-effects of the bebop era laid the basis for jazz musicians and composers to experiment with different methods and styles in achieving distinct harmonic and melodic patterns. Former musician of Miles Davis, Chick Corea who is instrumental to the bebop repertoire were among the composers who took part in the expansion of the post-bop and fusion jazz (Strunk, 2016). The advancement of Corea's composition was extensive and cross-disciplinary throughout his career. *Children's Songs*, a collection of compositions written for piano was released in 1984 and it revealed Corea's adoration for Bela Bartok's work. *Children's Songs* has a similar format to Bartok's *Mikrokosmos* which was designed as a progressive piano study for young pianists, and it introduces atonality, polyrhythms and polychords among other 20<sup>th</sup> century composition tools (Lynch, 2012).

## Background and Context

Corea began composing the songs in 1971 and the music was first recorded in July 1983 for the studio album, *Chick Corea's Children's Songs*. A total of 20 short solo piano pieces and one Baroque chamber trio was recorded in the album. Some of the 'Bartokian' resemblances were the use of pentatonic or modal scales, odd time signatures and polyrhythm, complex styles in a fleeting period, and increasing level of playing difficulty through the song sequence. Chick Corea in the preface of the annotated version of the album says that he wants to "convey simplicity as beauty, as represented in the spirit of a child." This is reflected through the application of dynamics, tonality and rhythm used in the compositions (Corea et al., 1984).

The application of the theory of 'polymodal chromaticism,' coined by Bartok in the 1930's is highly apparent in Corea's Children Song No.10. The occurrence of elements of the theory in Corea's works has been implied in a previous study by Daniel Alan Duke, 'The Piano Improvisation of Chick Corea: An Analytical Study' and Jordan Michael Lynch in 'Where have I know this piece before? An exploration of harmony and voice leading in the compositions of Chick Corea' (Duke, 1996; Lynch, 2012, p. 56). However, a detailed music analysis exhibiting the unique compound scales and how it is used to expand tonality in Corea's works were not explored along with the compositional techniques that has been applied to integrate the theory of polymodal chromaticism. **Figure 1** shows an example of a polymodal composite scale.



**Figure 1. Example of Polymodal Composite Scale**

Given the background of Corea as a jazz composer that is applying a tonal expansion method of the 20<sup>th</sup> century classical composer Bela Bartok, the focal point of this study is to uncover distinctive compositional and arranging techniques in the selected piece using the polymodal

chromaticism theory. The research also uncovers the unique combination of scales that are compounded to achieve tonal expansion leading towards total chromaticism. In addition, the correlation between musical forms and polymodal chromaticism are revealed through the results obtained through the analysis.

## **Methods**

In uncovering the compound scales and expanded tonality in Chick Corea's Children Song no.10, a qualitative theoretical framework is applied where a combination of music analysis method and Schenkerian music analysis method are used to analyze. The research starts with the selection of the piece: Children Song No.10, 1984, which is then digitalized using a notation software as per the selected recording. A melodic analysis using the Schenkerian method is then conducted to reveal the type of modal scales being applied on both the staves of treble and bass. The results of the findings are merged on a keyboard graph to unveil the compound scales. The compound scales are then measured from a scale of seven (diatonic) to 12 (chromatic) notes. Each unique combination of scales is analyzed in this manner to expose the type of compound scales being used and the level of tonal expansion achieved through the process.

A second music analysis is done to detect key compositional techniques that are applied to integrate the theory of polymodal chromaticism. This includes ostinatos, harmonic progressions and arranging techniques highlighting harmonic movements, voicings, motivic development, and stylistic influences. A table of summary of polymodal chromaticism is written at the end of analysis of the piece indicating types of modal scales used, number of composite scale notes derived, and type of tonality (tonal, polymodal or chromatic) applied at specific score section and measure number. Through the summary, a graph is created to reveal the correlation between polymodal chromaticism and musical form.

## **Analysis and Results**

Below is the analyzed score of Children Song No.10 that highlights the use of polymodal chromaticism. This is evident in the use of contrasting modal scales on both hands.

# Children's Song No.10

Chick Corea

♩ = 120

**A**

Piano

Dm/A

D Locrian

Gb Ionian

Eb/Bb

Bb Mixolydian

6

G Whole Tone

Ab Ionian

G/D

Eb Ionian

Bb Whole Tone

Bb Ionian

E Ionian

Ab/Eb

Eb Dorian

11

Eb Ionian

D Whole Tone

Db Whole Tone

C# Super Locrian

Eb Dorian

F# Ionian

G Ionian

C# Ionian

D Dorian

**B**

16

C# Super Locrian

G# Locrian

C# Dim. Whole-Half

Eb Aeolian

E Ionian

F# Ionian

G Mixolydian

21

A Harmonic Minor | Ab Ionian | Gb Ionian | F Ionian

A Dim. Whole-Half | A Dim. Half-Whole | Ab Ionian | G Mixolydian

26

Eb Ionian | **C** Ab/C | Eb Aeolian | B Aug. Scale

G Mixolydian | F# / C# | Db Mixolydian

31

C# Locrian | E Phrygian

A Locrian | Db Lydian | A Aeolian | A Aeolian

1. | 2.

36

**D** A Mixolydian | Eb Ionian

D Dorian | Eb Ionian | Eb Mixolydian | E Phrygian | F Mixolydian

POLYCHORDS

41

The image shows two staves of piano music. The top staff is numbered 46 and the bottom staff is numbered 51. The top staff has a treble clef and the bottom staff has a bass clef. The music is in 3/4 time. The top staff has a key signature of one sharp (F#). The bottom staff has a key signature of one flat (Bb). The music is annotated with various modal scales and polychords. The top staff has a box labeled 'E' above it at bar 47. The bottom staff has a box labeled 'C' above it at bar 51. The music is annotated with 'POLYCHORDS', 'A Aeolian', 'Eb Ionian', 'G Mixolydian', and 'C/G'.

**Figure 2. Transcription and Polymodal Chromaticism Analysis of Chick Corea's Children Song No 10.**

Children Song No.10 is written in the time signature of  $\frac{3}{4}$  with a rhythm of jazz waltz. The piece starts with a polychord of Dm/A on the right hand and Eb/Bb on the left hand, establishing a series of polymodal melodic movement to come after. Bars two to four has a melody consisting of Bb Mixolydian on the left hand. Each bar starts with a Bb note creating a pedal point. The right hand of bars two and three has a melody built on D Locrian while bar four is made of the notes Gb, Bb and F, which is part of a Gb major7 chord, thus resulting in a Gb Ionian scale. The D Locrian and Bb Mixolydian scale on bars two to four shares the exact same notes resulting in a very tonal approach of Bb Mixolydian as there is an established Bb pedal point on the left hand. Bar 5, however, has a composite of G Ionian and Bb Mixolydian which combines into a 10-note scale. This sudden change also signifies the beginning of rapid changes in tonality in bars to come. Bars six to eight have a scale change on each bar on the left hand creating a very free movement of harmony and tonality. Bar six has an interesting change in tonality with a shift into a contrasting G whole tone scale on the right hand, and Bb whole tone scale on the left hand.

The composite of scales in bar 6 consists of 12-notes which creates total chromaticism. Although the change happens merely for a bar, the total chromaticism allows the tonality to lean more towards atonality. Bars seven and eight uses Ab Ionian on right hand while left hand uses Bb Ionian on bar seven and E Ionian on bar eight. Bar seven marks the end of Bb pedal on the left hand that was consistent throughout bars two to seven. The composite scale on bar seven results in a nine-note scale. As the Ab Ionian scale remains on the right-hand part of bar 8, the left hand moves to E Ionian resulting in an 11-note composite scale. Bar nine consists of polychord like bar one, thus starting a new phrase and a series of polymodal harmonies alike to bars two to eight. The polychord on bar nine is a combination of G/D on the right hand and Ab/Eb on the left hand. Bars 10 and 11 show a continuation of Eb as a pedal point on the left

hand through the Ab/Eb polychord from bar nine. The modal scale used on bars 10 and 11 on the left hand is Eb Dorian while the right hand uses Eb Ionian.

The pedal point on the left hand moves away from Eb on the left hand towards a series of minor second interval movements on the root note from bars 12 to 17. The movement starts from F# to G, C# to D, and Eb to E. This creates a fluid symmetrical movement on the left hand. The right hand on bar 12 consists of D whole-tone scale notes while the left hand consists of F# Ionian scale notes. The right-hand scale changes into Db whole-tone scale on bars 13 and 14. The left hand consists of G Ionian on bar 13 and changes to a C# Ionian on bar 14. The composite scales reveal that both combinations of modal scales in bars 13 and 14 have a 10-note composite scale. However, the changes in left hand scale of bars 13 to 14 do alter the overall color of the composite scale. Bars 15 to 18 have a single line melody and a change in rhythmic pattern on the right hand unlike the previous bars that consists of a dotted minim followed by a minim. The use of crotchets throughout these measures creates a notable change in the piece, and it indicates and serves as a clear end to section A of the piece. The right hand has a three-bar stint of C# super Locrian as the scale applied from bars 15 to 17 while the left hand constantly changes from D Dorian, Eb Aeolian, and E Ionian. The composite scale of bar 15 resulted in an eight-note scale, bar 16 resulted in an 11-note scale and bar 17 resulted in a 10-note scale. The final bar of section A, bar 18, sees a change on the modal scale on the right hand from C# Locrian to G# Locrian and the left hand into F# Ionian. The combination of these modal scales produces a 10-note scale.

Section B of the piece retains a similar rhythmic motive as section A, especially the left-hand ostinato. Section B also uses an octatonic scale on the right hand of bars 19 and 20, which reflects jazz influences of Chick Corea. The scale used is a C# diminished built in the sequence of whole-half/tone-semitone intervals. The left-hand part of bars 19 and 20 uses a G Mixolydian modal scale. The combination of C# diminished scale (octatonic) and G mixolydian result in an 11-note composite scale, one short of achieving total chromaticism. Bars 21 and 22 show another interesting use of non-modal scales. The left hand uses an A diminished scale built on whole-half/tone-semitone sequence and an inverted half-whole/semitone-tone, both used on bars 21 and 22, respectively. The right hand on bars 21 and 22 uses an A harmonic minor. The composite scale of A harmonic minor and A diminished (whole-half/tone-semitone) on bar 21 produces a 9-note scale while bar 22 with an inverted diminished scale creates a total chromatic scale. The tonality then eases on the following bars 23 to 26 where a combination of Ionian/Major and Mixolydian scales are applied. Bar 23 resolves the harmonic tensions by both hands using Ab Ionian and on the following bar 24, the left hand remains Ab Ionian while the right hand changes into Gb Ionian.

Section B of the piece ends with the left-hand part of bars 25 and 26 consisting of notes from G Mixolydian scale while the right-hand uses F Ionian on bar 25 and Eb Ionian on bar 26. The combination of F Ionian and G Mixolydian creates an eight-note composite scale on bar 25. On bar 26, it is a 10-note composite scale. Section C begins with a long polychord like bars one and nine. The polychord consists of a combination of Ab/C and F#/C#. This section has a similar ostinato as section A and B on the left hand and the phrase ends with an introduction of quavers throughout measure 33, 34 and 35. Unlike the previous sections, section C does not change in modes and scales as quickly as before. The scales are prolonged up to 3 bars, an obvious change compared to a switch of scale every bar on the previous sections. On Bars 28-30, Db Mixolydian scale is used on the left hand. The right hand has Eb Aeolian on bars 28 and

29. Both E $\flat$  Aeolian and D $\flat$  Mixolydian share the same notes making bars 28-29 tonal. The right-hand changes into a B augmented scale on bar 30. Augmented scales are widely used in jazz music, and it is a symmetrical scale built on intervals of minor-thirds. The use of an augmented scale, which is a hexatonic scale combined with a Mixolydian scale resulted in a composite of nine-note scale in bar 30. The piece continues with a C $\sharp$  Locrian on the right hand and A Locrian on the left hand on bars 31 and 32. The combination of these modal scales resulted in an 11-note scale.

An E Phrygian scale is applied throughout bars 33 to 35 on the right hand. These bars are also different in rhythm compared to the ostinatos established in previous sections. The right-hand part has an all-crotchet bar while the left hand uses all quavers. On bar 33, the left hand consists of notes from D $\flat$  Lydian scale and on bar 34 and 35 an Aeolian mode is being used. The left-hand descending notes on bar 34 also has a permutation on the last note of the bar (marked  $\textcircled{1}$ ). The B $\flat$  does not belong in the scale of An Aeolian thus serving as a chromatic passing-note. The composite scale in bar 33 shows polymodality and produces an 11-note scale. However, the scale E Phrygian and A Aeolian share the exact same notes in bars 34 and 35 resulting in a modal approach and marking the end of section C. Section D of the piece has a drastic outlook compared to the previous sections. Ostinatos are not applied throughout bars 36 to 39. The section starts with an A Mixolydian on the right hand and D Dorian on the left hand on bar 36. The composite scale resulted in a nine-note scale.

E $\flat$  Ionian scale is applied to the right-hand part of bars 37 to 39. The left hand starts with E $\flat$  Ionian on bar 37 extending into half of bar 38 and goes into a rapid succession of modal scale change every three quavers. This rapid change of scale also emphasizes and prepares for a time signature change on bar 40, from  $\frac{3}{4}$  to a  $\frac{6}{8}$ . A chromatic ascending pattern of E $\flat$  Mixolydian, E Phrygian, and F Mixolydian is applied every three quavers creating an accent of a compound rhythm time signature with the left hand remaining on E $\flat$  Ionian.

The mixture of E $\flat$  Ionian and E $\flat$  Mixolydian resulted in a major scale with the addition of a b7 note. The combination with E Phrygian shows a 10-note composite scale, while the other half of the bar with F Mixolydian has an eight-note scale. Although the extent of polymodality is not as wide, the rapid change in scale does produce a momentous change in color of the tonality in bars 37 and 38. The remaining bars 40 to 47 of section D of the piece do not use a polymodal chromaticism approach but rather a movement of complex polychords. Throughout these bars, a root note of F $\sharp$  is always present while the upper structure of the harmony keeps on moving each bar.

The concluding section of the piece, section E returns to a familiar polychord intro, a combination of D/F $\sharp$  on the right hand and C/G on the left hand. The left hand of bars 49 to 52 highlights an ostinato built on G Mixolydian. This is an interesting choice as the piece ends with a C Major chord on both hands. The G Mixolydian is used to prepare a perfect cadence of V-I on the final bar. An A Aeolian is used on bars 49 to 51 on the right hand, which shares the same notes as a C Major scale. On bar 52 however, E $\flat$  Ionian is applied right before resolving into C Major on the last bar. A very drastic yet calm ending for a piece that is fluid in tonality. The combination of an A Aeolian and G Mixolydian on bars 49 to 51 is tonal as both the scales share identical notes. The composite scale of E $\flat$  Ionian and G Mixolydian on bar 52 resulted in a 10-note scale. A summary of compound scales and tonality applied throughout the piece is shown in **Table 1**.



**Table 1: Summary of polymodal chromaticism in Children Song No.10.**

Section	Bars	Modal Scales	No. of composite scale notes	Tonality
A	2-4	D Locrian + B $\flat$ Mixolydian	7	Modal
A	5	G Ionian + B $\flat$ Mixolydian	10	Polymodal
A	6	G Whole Tone + B $\flat$ Whole Tone	12	Polymodal (Chromatic)
A	7	A $\flat$ Ionian + B $\flat$ Ionian	9	Polymodal
A	8	A $\flat$ Ionian + E Ionian	11	Polymodal
A	10-11	E $\flat$ Ionian + E $\flat$ Dorian	9	Polymodal
A	12	D Whole Tone + F $\sharp$ Ionian	10	Polymodal
A	13	D $\flat$ Whole Tone + G Ionian	10	Polymodal
A	14	D $\flat$ Whole Tone + C $\sharp$ Ionian	10	Polymodal
A	15	C $\sharp$ Super Locrian + D Dorian	8	Polymodal
A	16	C $\sharp$ Super Locrian + E $\flat$ Aeolian	11	Polymodal
A	17	C $\sharp$ Super Locrian + E Ionian	10	Polymodal
A	18	G $\sharp$ Locrian + F $\sharp$ Ionian	10	Polymodal
B	19-20	C $\sharp$ Dim. Scale (W-H) + G Mixolydian	11	Polymodal
B	21	A Harmonic Minor + A Dim. Scale (W-H)	9	Polymodal
B	22	A Harmonic Minor + A Dim. Scale (H-W)	12	Polymodal (Chromatic)
B	24	G $\flat$ Ionian + A $\flat$ Ionian	9	Polymodal
B	25	F Ionian + G Mixolydian	8	Polymodal
B	26	E $\flat$ Ionian + G Mixolydian	10	Polymodal
C	30	B Augmented + D $\flat$ Mixolydian	9	Polymodal
C	31-32	C $\sharp$ Locrian + A Locrian	11	Polymodal
C	33	E Phrygian + D $\flat$ Lydian	11	Polymodal
C	34-35	E Phrygian + A Aeolian	7	Modal
D	36	A Mixolydian + D Dorian	9	Polymodal
D	38	E $\flat$ Ionian + E $\flat$ Mixolydian	8	Polymodal
D	39	E $\flat$ Ionian + E Phrygian	10	Polymodal
D	39	E $\flat$ Ionian + F Mixolydian	8	Polymodal
D	52	E $\flat$ Ionian + G Mixolydian	10	Polymodal

Chick Corea's jazz influence could be observed from his style of applying the polymodal chromaticism theory in Children Song no.10. Ostinatos are broadly applied in Children Song No.10 combined with a quick change of polymodal scales. The rhythm of the ostinato is preserved while the notes switch according to the mode or scale. Throughout the piece, frequent changes in compound scales create an unresolved tonal establishment. The compound scales are used melodically and harmonically, paired with a jazz waltz-like rhythm. Section A to C of the piece exhibits Corea's intent in preserving a similar motif throughout while the compound scales change. Section D transitions into a series of arpeggiated polychords and resolving back

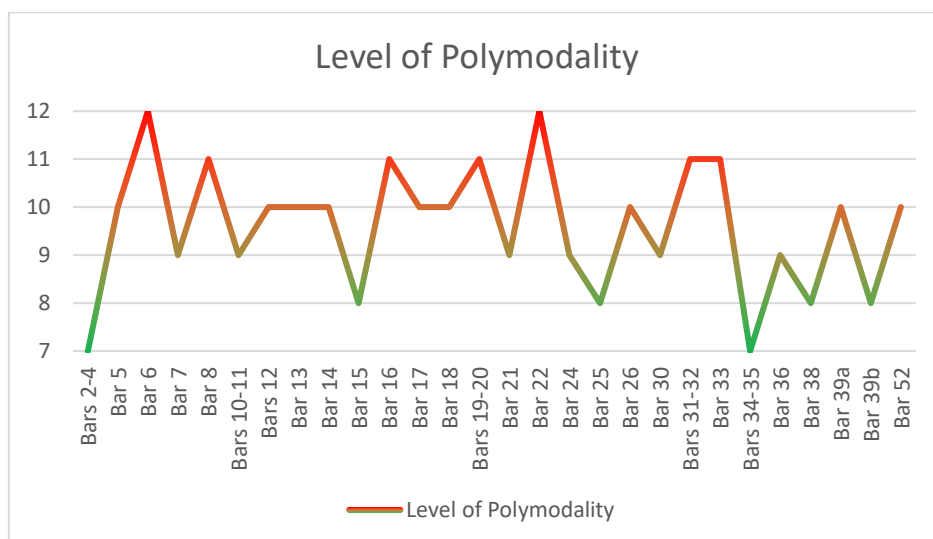
into the main theme in section E. Below are the unique scales used by Corea in Children Song no.10 to create polymodal scales.

- a) Super Locrian scale
- b) Diminished scale (Whole-Half)
- c) Diminished scale (Half-Whole)
- d) Augmented scale

Below are the compound scales resulting in a 12-note (chromatic) scale used in the piece.

- a) G whole tone + Bb whole tone
- b) A harmonic minor + A diminished (Whole-Half)

Corea's application of polymodality in Children Song no.10 plays a crucial role in the overall form development of the piece. A turbulent movement in the level of polymodality can be seen in **Figure 3** reflecting Corea's intent to generate a soundscape that moves constantly from tonal to polymodal and twice reaching 12-note compound scale (chromatic/atonal) near the beginning and in the middle of the piece. The level of polymodality shifts between 10 and 12-note polymodal scales throughout the piece. Figure 5.3 indicates that the piece has a (polymodal – atonal – polymodal) change indicating the mid-section a climax. The polymodal levels reveal an arch shape consistent with Bartók's symmetry notions. Corea applies an (A-B-C-D) musical form in this piece. Section A (bars 1-10) has an increase from 10-note compound scale up to an 11-note compound scale. Section B (bars 11-18) maintains the 11-note compound scale as a preparatory section progressing into a full chromatic compound scale in the first five bars of Section C. The level of polymodality decreases as Section C (bars 19-28) concludes and enters a quiescent period using 10-note compound scale towards the end in Section D. Children Song No.11 exhibits total polymodality throughout the piece. The compound scales mostly display transitions between 10, 11, and 12-note polymodality level while defining section changes, harmonic resolutions, and overall musical form.



**Figure 3. Level of Polymodality in Children Song No.10.**

## Conclusion

Musical analysis of Chick Corea's compositions focusing on polymodal chromaticism and expanded tonality allows a new perspective on the composers works. The results of this method

reveal detailed insights and formulas to achieve fluidity in the realm in between tonal and atonal music. Furthermore, the approach also opens a unique path towards music analysis and compositions of jazz and contemporary music in the future.

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