



Trobador Research Group

ANALYSIS

composition by Bart Quartier

EAUX DORMANTES

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Score of Eaux dormantes on www.bartquartier.be

Eaux dormantes received the Sabam price for Jazz Themes 2000, Belgium

Eaux dormantes is recorded on the CD 'Thank You De Werf 058 www.dewerf.be



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Sources

The starting point of Eaux Dormantes (sleeping waters) is the multi-tonic system: in this case an octave is divided in three equal parts (like in John Coltrane's Giant Steps). The foundation of this tune is more a progression of harmonies while the further development lies in the melody, which connects the tonalities.

1. Melody

Introduction: a melody exists of intonation besides rhythm; intonation exists of intervals and intervals can be divided into three categories: chromatic / diatonic / skips. These elements can be found in both themes **A** and **B**

1. Intervals

	A	B
System 1	diatonic	diatonic
System 2	chromatic	diat/skip/chrom
System 3	diat/skip/chrom	chromatic
System 4	skip	skip

A System 3

The musical notation shows a sequence of notes on a staff: G4 (quarter), A4 (quarter), B4 (quarter), C5 (quarter), B4 (quarter), A4 (quarter), G4 (quarter), F#4 (quarter), E4 (quarter), D4 (quarter), C4 (quarter), B3 (quarter), A3 (quarter), G3 (quarter), F3 (quarter), E3 (quarter), D3 (quarter), C3 (quarter). The intervals between these notes are categorized as diatonic, skip, and chromatic.

Each interval has his own characteristic:

Diatonic: modal – defined – statement

Chromatic: tension – obscure – dark

Skips: dramatic – active

So each system has a different character and gives some contrast. On the other hand there is a balance between the themes **A** and **B** and also within **A** and within **B**.

2. Development of the melody in relationship to harmony and rhythm

Searching balance between simplicity and complexity

S1 and S2 melody/rhythm: the simplicity of the melody (diatonic scale in S1 and chromatic scale in S2) is in balance with complex character of harmony

S3 melody/rhythm/harmony: the combination of these three elements forms a complexity to the climax

S4 release: there is an augmentation in the rhythm of the melody and in the rhythm of the harmony: the chords are now spread over 2 bars.

3. Choice of notes

A System 1

Musical notation for System 1. The melody consists of four measures. The first measure starts with a half note G4. The second measure has a half note Eb4. The third measure has a half note B3. The fourth measure has a half note Bb3. The chords are: G-9(Maj7) under the first measure, Eb maj7 aug under the second measure, B-9 under the third measure, and Bb7alt under the fourth measure.

At first sight we remark the fifth as the first note of measure 1 till 3. Together with the diatonic descending movement it gives a statement feeling.

On the other hand, the use of thirds has always been important in the melody, as it is the very characteristic note of a mode: each first note of each bar is the third of the upper structure. Bb maj9 (#5) is the upper structure of G-9 (maj7). The note *d* is the third in Bb maj. Likewise for the next two measures.

Diagram showing the relationship between a given chord and its upper structure. On the left, a chord symbol G-(Maj7) is shown above a treble clef staff with a chord voicing of G2, B2, D3, F#3, G3. Below it is the text "given chord". On the right, a chord symbol Bbmaj7aug is shown above a treble clef staff with a chord voicing of Bb2, D3, F#3, G3, Bb3. Below it is the text "upper structure".

A System 2

Musical notation for System 2. The melody consists of four measures. The first measure has a half note Eb4. The second measure has a half note B4. The third measure has a half note G4. The fourth measure has a half note F#4. The chords are: Eb-9 (maj7) under the first measure, B maj7 (#5) under the second measure, G-9 (maj7) under the third measure, and F#7alt under the fourth measure.

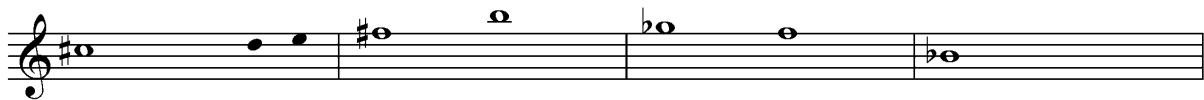
Measure 1: *gb* is the third of Eb-

Measure 2: *g* is a characteristic note of B maj 7 (#5)

The third of G-9 (maj7) and F#7 alt (*a#* or *b flat*) is delayed until the very last beat of.

The chromatic ascending line gives a tension important for the climax in system 3.

A System 3



Measure 1: *c#* is the #4 in G min; the '*diabolus in musica*' gives the most tension; At the same time it is the chromatic approach note to *d*, the third in B min (relative to G min).
 Measure 2: *b* is the highest note of the tune. The climax is situated at 2/3 of the first theme.
 Measure 3: *g flat* is the third of Eb min and D7 alt
 Measure 4: *b flat*: the #5 is a characteristic note of the altered mode D7 alt

A System 4



Measure 1: *d#* (or *e flat*) is the b6 of G min: a sort of deceptive cadenza (the upper structure of C# min is E = VI in G). At the same time, *d#* is the approach note to *e*, the third in C#-11 on the last beat in the second measure. The wide, open character of a fifth gives us a floating feeling.
 Measure 3: *d#* is the characteristic note of the Lydian dominant mode (#4). Just before measure 3, the melody could descend in a diatonic way to *d#* below, but the interval of a major seventh up gives a surprise effect. The third of A7 (#11) *c#* is delayed to two measures further: on the last beat of the first measure of theme **B**.
 During the whole theme **A**, the note G is only used once as a passing note (System 2).
 So there is not yet a confirmation of the tonality.

4. First note of each bar

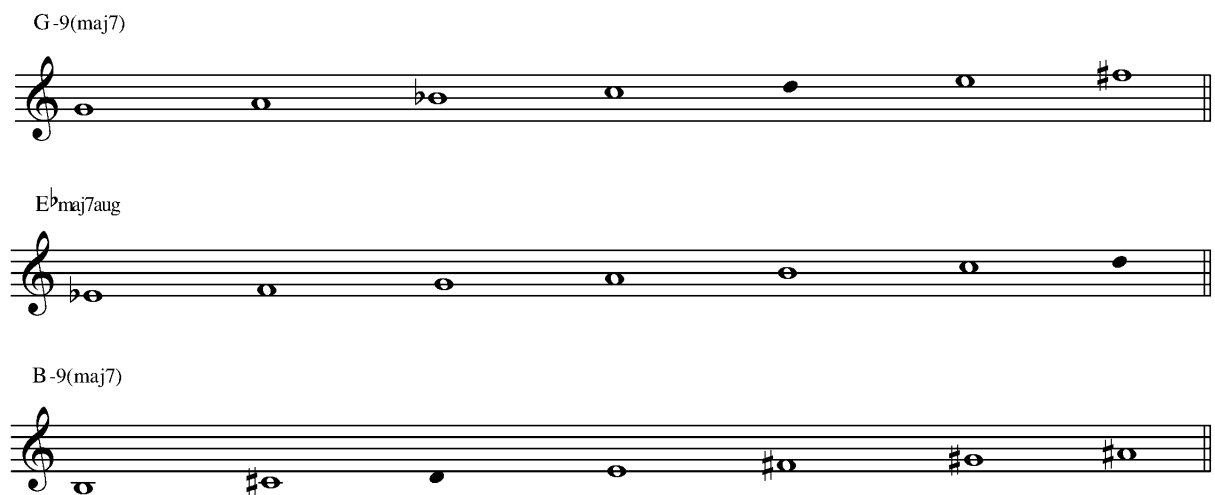
A

The first notes of each bar in theme **A** give us a chord with a clear harmonic function in B minor, totally different from the given harmony G min. But B is also relative to G. The last harmony Ab (or G#) is at the same time the first given harmony in theme **B**.



The first notes of the three first bars of the theme **B** are $b - d\# - g$; these are the bass notes of the harmony of theme **A**: G - Eb - B.

5. Common notes



d is the common note between the three modes; d is the dominant of G, d is leading note of Eb, d is the third of B; (d is also the first note and the last note of the tune).

The common notes between G- (maj7) and Eb maj7 (#5) are: $g-a-c$ while the other notes of G- (maj7) namely $b\ flat-e-f\#$ are common with B- (maj7).

6. Interval vectors * (For an explanation of interval vectors, please read at the end of this analysis.)

Intervals used in system 1 are:

Minor second - major second - minor third - major third - perfect fourth - augmented fourth
 1 1 1 1 0 0

Intervals do give the melody a different character. The intervals used in theme **A** and **B** are:

- A** S1 < 111 000 > stability
- S2 < 100 000 > minimum movement
- S3 < 110 010 > maximum movement to climax
- S4 < 110 110 > contrast (the only major third in the whole piece)

- B** S1 < 111 000 > = S1 of **A**
 S2 < 111 001 > = contrast (the only augmented fourth in the whole piece)
 S3 < 100 000 > = S2 of **A**
 S4 < 110 110 > = S4 of **A**

7. Tessitura

- A** S1 *d'' - c#'* medium tessitura: relax – statement
 S2 *f' - a#'* small – chromatic tension
 S3 *b flat' - b''* bright to climax
 S4 *d#'' - e'* similar to S1
- B** S1 *b' - c'''* bright: development of the melody in contrast with voice 2 = theme **A**
 S2 *a'' - b flat'* stays bright
 S3 *d'' - g''* bright but dense with tension of the chromatic ascending line
 S4 *g'' - c'* bright to dark

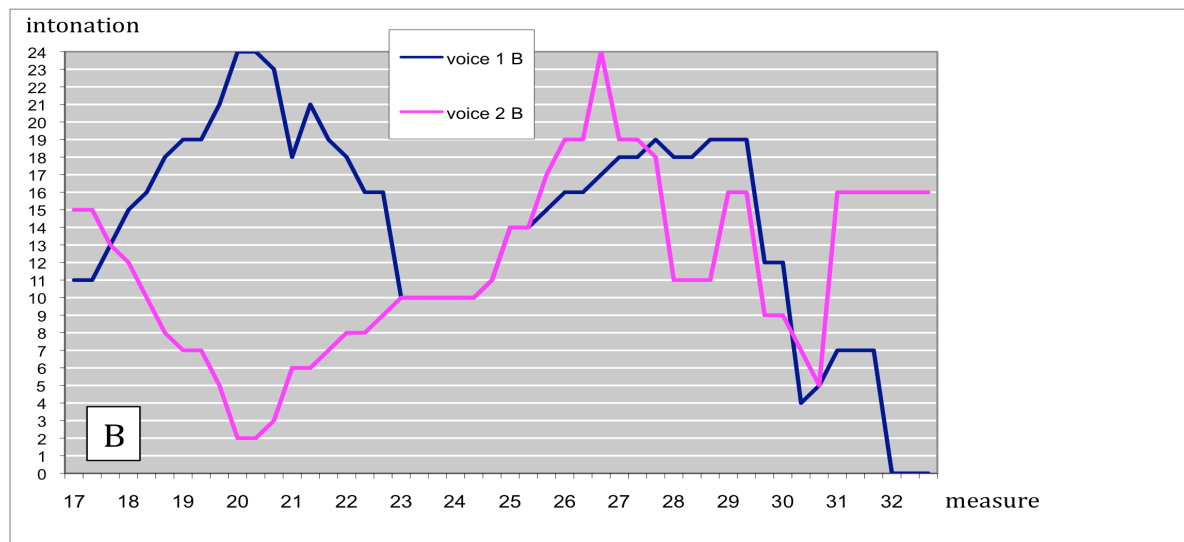
In general the theme **B** has a more bright character than theme **A**.

A total: *b'' - c#'* respectively halve tone below *c'''* and half tone above *c'*

B total: *c' - c'''* two octaves divided in three gives us the chords of **B**: C-Ab-E

The highest note in **A** is at approx. 2/3 of the theme while the highest note in **B** is at approx. 2/3 of the whole structure **A** and **B**.

8. Direction



mirror-----unison-----random-----parallel-random-----

The melody of **B** starts with great difference in direction, comes together in unison for the climax and fall sparsely down in random movement.

◦ The melody of **B** is divided into four parts; four techniques are used:

- inversion (mirror):

A



B



A is now the second voice of **B** (transposed half tone higher)

B



◦ The interval of a major third ($b-d\#$) between voice 1 and 2 (measure 1) appears again at the end of **B** ($c-e$).

- unison for a short time: measures 23-24-25
- random for the second half
- parallelism in measure 29

◦ The first note of the unison at measure 24 is b ; b is also the highest point in **A** at measure 7. The midpoint of the random part is the note b ; the tonality B is the harmonic midpoint of the circle in **A**.

◦ Timing of important notes in relation to harmony

The third is obviously the most important note of a mode as it determines clearly the character. The fifth gives a statement feeling and the leading note asks for a solution.

Starting point in theme **A**: d (measure 1) is the leading note of E_b , d is the fifth of G and d is the third of B min.

The note just before the climax point is $f\#$ at measure 10: $f\#$ is leading note of G; $f\#$ is the fifth of B; $f\#$ (or g flat) is the third of E_b min.

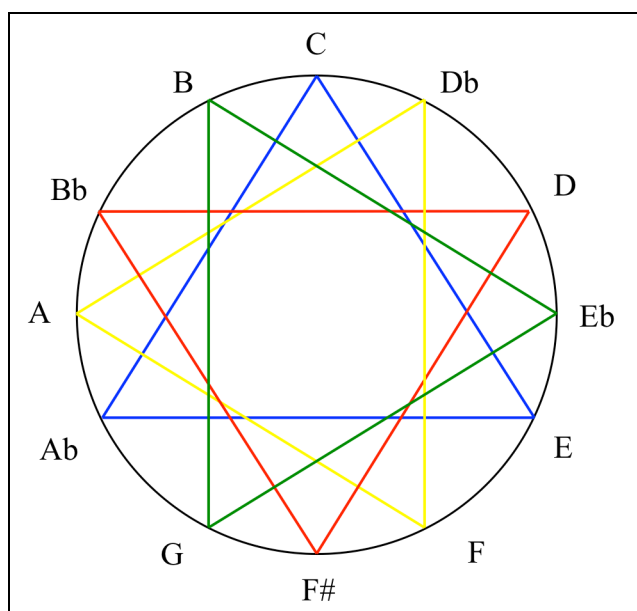
Release point: the note in measure 12 is b flat ($a\#$); $a\#$ is the leading note of B; b flat is the fifth of E_b ; b flat is the third of G min.

◦ Climax in theme **B**: the preparation of the climax at bar 26 is the chromatic scale in voice 1 (bar 25...) and in voice 2 (bar 21-24). The climax in intonation 'c' in bar 20 is at 2/3 of the whole tune.

2. Harmony

Each theme consists of three tonalities, which are connected by a triangle in the cycle of fifths. At the end of the tune, we've gone through the 12 tonalities.

Theme	Tonality		
A	G	Eb	B
B	Ab	E	C
D	F	Db	A
E	F#	D	Bb



1. Functions

G-9 (maj7)	Eb maj7 (#5)	B-9 (maj7)	Bb7 alt
I min	Vlb maj	III min	III7

Eb-9 (maj7)	B maj7 (#5)	G-9 (maj7)	F#7 alt
Vlb min	III maj	I min	VII7

B-9 (maj7)	G maj7 (#5)	Eb-9 (maj7)	D7 alt
III min	I maj	Vlb min → II in C# min	substitute of Ab7 = V in C# min

C#-11	C#-11	A9 (#11)	A9 (#11)
I min → IV min in Ab min		substitute of Eb7 = V in Ab min	

There are a lot of tonic characters in the **A** theme: when the circle is round, we hear the D7alt chord (bar 12) which is an escape to the next tonality: instead of going again to G min, the chord D7alt is a substitute of Ab7 (or G#7) which leads to C# min.

Remark: at the end of the solos just before the theme at **D** we have following progression: E-9 – C7alt – F-9. Now, G is an upper structure of E min. So we could consider this as a sort of II-V-I in F min.

2. *Colors*

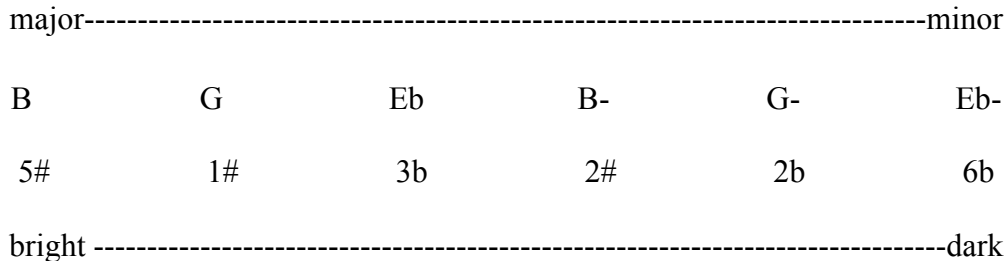
G-	Eb	B-	Bb7alt
Eb-	B	G-	F#7alt
B-	G	Eb-	D7alt
C#-		A7(#11)	

C# min sounds fresh and at the same time relaxed in contrast with the preceding augmented tensions. Depending on what's preceding, a chord can sound totally different (O. Messiaen).

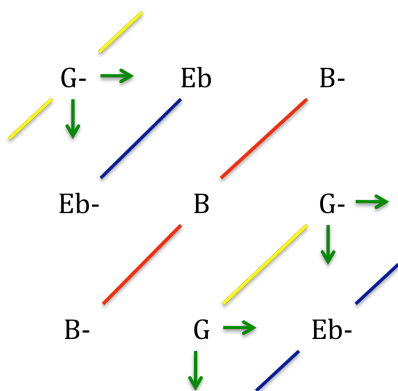
B augmented (6#) is situated in the middle of the circle and has the brightest color.

G is situated in the climax of the melody: Lydian augmented (bright scale).

As the tonalities are far from each other in the cycle of fifths, a wide color spectrum is the result; the more we go into the sharps, the brighter the mode sounds; getting into the flats results in a darker sound.



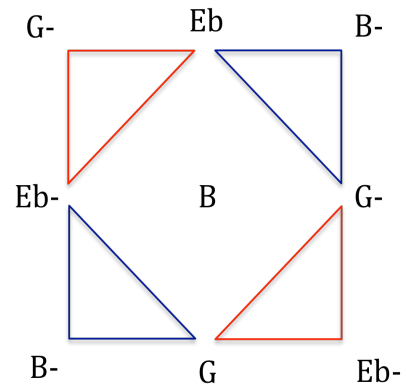
3. *Horizontal, diagonal and vertical direction*



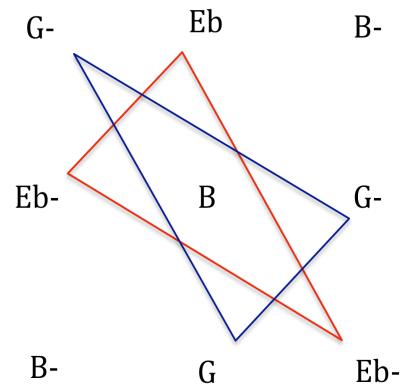
B is the pivot chord; remark the diagonal lines for G and Eb as well. The progression G Eb B (maj or min) is found not only in a horizontal direction but also in a vertical direction. Likewise for GBEb, BEbG, BGEb, EbGB and EbBG.

4. Mirrors

When you work with a technique like octave division, it is obvious that you will get some mirrors. The blue triangles form a mirror around the chord B. The red triangles form another sort of ‘inversed’ mirror around the chord B.

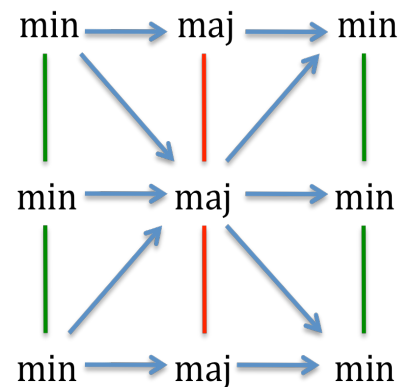


Another mirror around B is formed by the chords G (blue triangle) and Eb (red triangle).



° *Mirrors in minor/major*

Horizontal/diagonal: the min / maj / min progression is in a horizontal way as well as diagonal up and down (blue arrow).
Vertical: the minor harmonies (green line) form also a mirror around the major harmonies (red line).



◦ *Mirror in common tones*

In soloing, it is always use full to know the common notes between the modes in order to create a smoothly, fluid melody.

Common tones in $\square C$

First part of $\square C$

Note <i>e</i>	A-9(maj7) fifth →	Fmaj7(#5) seventh →	C#-9(maj7) third →	C7alt third
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Note <i>c</i>	F-9(maj7) fifth →	Dbmaj7(#5) seventh →	A-9(maj7) third →	Ab7alt third
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Note <i>a flat</i>	Db-9(maj7) fifth →	Amaj7(#5) seventh →	F-9(maj7) third →	E7alt third
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The common tones in the solo part $\square C$ are *e*, *c* and *a flat*: E, C and Ab are the chords of the preceding structure theme $\square B$.

Second part of $\square C$

Note <i>f</i>	Bb-9(maj7) fifth →	Gbmaj7(#5) seventh →	D-9(maj7) third →	C#7alt third
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Note <i>c#</i>	F#-9(maj7) fifth →	Dmaj7(#5) seventh →	Bb-9(maj7) third →	A7alt third
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Note <i>a</i>	D-9(maj7) fifth →	Bbmaj7(#5) seventh →	F#-9(maj7) third →	E7alt third
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The common notes in the second part of $\square C$ are *f*, *c#* and *a*: F, Db and A are the chords of the following structure $\square D$.

4. Proportions and Numbers

Numbers are just a tool to express proportions, relationships; or how everything is always searching for balance. Although many composers are using very complex mathematics (like I. Xenakis), this is just a very simple introduction.

° Circle movement in numbers

melody A voice 1					
<i>(explanation: c = 0; c# = 1; d = 2...)</i>					
S1	2 0	11 9 7	6 4	1 2	= 42 ≈ 6
S2	5 6	7 8	9	10	= 45 ≈ 9
S3	1 2 4	6 11	6 5	10	= 45 ≈ 9
S4	3 8	6 4	3		= 24 ≈ 6

69 is the mirror of 96

$6+9+9+6 = 30 \approx \boxed{3}$ relationship with the three chord harmony and with time signature $\frac{3}{4}$

melody B voice 1					
S1	11 1	3 4 6	7 9	0 11	= 52 ≈ 7
S2	6 9 7	6 4	10	11	= 53 ≈ 8
S3	2 3	4 5	6 7	6 7	= 40 ≈ 4
S4	7 0	4 5	7	0	= 23 ≈ 5

$7+8+4+5 = 24 \approx \boxed{6}$ the tune exists of 6 X the structure: A-B-C-D-E (C contains two structures)

A + B: $3 + 6 = \boxed{9}$ the circle contains 9 chords

Semitones in A

S1	2 1 2 2 1 2 3 1	= 14 ≈ 5
S2	1 1 1 1 1	= 5 ≈ 5
S3	1 2 2 5 5 1 7	= 23 ≈ 5
S4	7 2 2 11 4	= 26 ≈ 8

Semitones in B

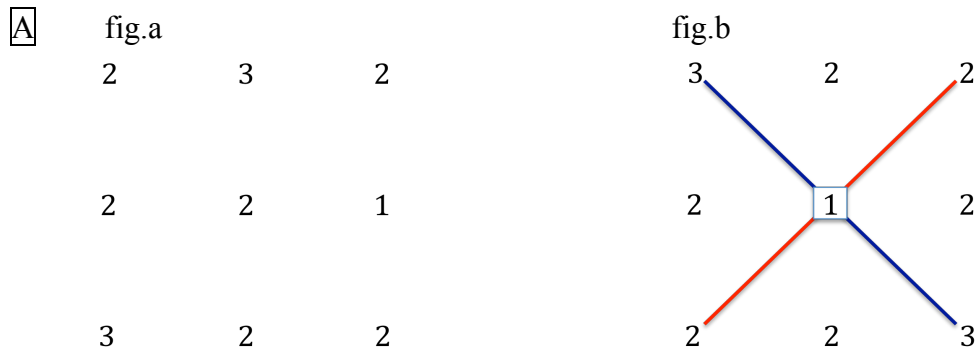
S1	2 2 1 2 1 2 3 1	= 14 ≈ 5
S2	3 2 1 2 6 1	= 15 ≈ 6
S3	1 1 1 1 1 1 1	= 7 ≈ 7
S4	7 8 1 2 7	= 25 ≈ 7

$$5+5+5+8 = 23 \approx \boxed{5}$$

$$5+6+7+7 = 25 \approx \boxed{7}$$

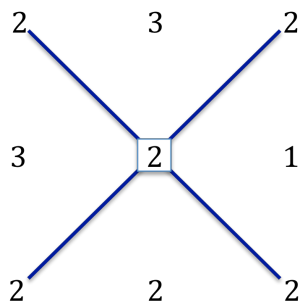
A + B: $5 + 7 = \boxed{12}$ the whole tune contains 12 tonalities

° Amount of different notes in the circle structure (first three bars of System 1,2 and 3)



If we move the first column of A to the third one (fig.b), then we remark two mirrors around the midpoint 1: one mirror around the red line and one around the blue line.

B



In the theme **B**, we see that the numbers 2 are mirrors on their own.

° Mirror in numbers of chord upper structure ($c = 0$; $c\# = 1$; $d = 2\dots$)

G-9 (maj7) 10 ← 2 ← 6
 B-9 (maj7) 2 → 6 → 10

° Key signature and Fibonacci

A G maj (1#) – B min (2#) – Eb maj (3b) – B maj (5#)

2+1=3; 3+2=5

ooo

** Interval vectors*

explanation of 1 and 0:

1 means that the interval is used; 0 means that the interval is not used

the first number shows a minor second; the second number shows a major second; the third number shows a minor third; the fourth number shows a major third; the fifth number shows a perfect fourth; the sixth number shows a augmented fourth

for ex.:

<i>1</i>	<i>1</i>	<i>1</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>m2</i>	<i>M2</i>	<i>m3</i>	<i>M3</i>	<i>P4</i>	<i>#4</i>

there is a minor second, a major second, a minor third, no major third, no perfect fourth and no augmented fourth in the melody

110110: there is a minor second, a major second, no minor third, a major third, a perfect fourth, no augmented fourth in the melody.

For intervals wider then augmented fourth, we use the inversions of intervals (like minor second becomes major seventh and vice versa)

Conclusion

Although this analysis might be somewhat extended - a lot of things were discovered a long time later after the tune was finished - it was not my intention to write like this. The only starting point was the harmony – here the division of an octave in three. Al the rest came up following the ear and the heart.

Note: John Coltrane's choice of chords GEB in Giant Steps (1959) and the book GEB (Gödel, Escher, Bach) written by Douglas R. Hofstadter (1979) have the same subject...

Sources

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www.bartquartier.be

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