Journey to the Heart of Music

Philip Perry

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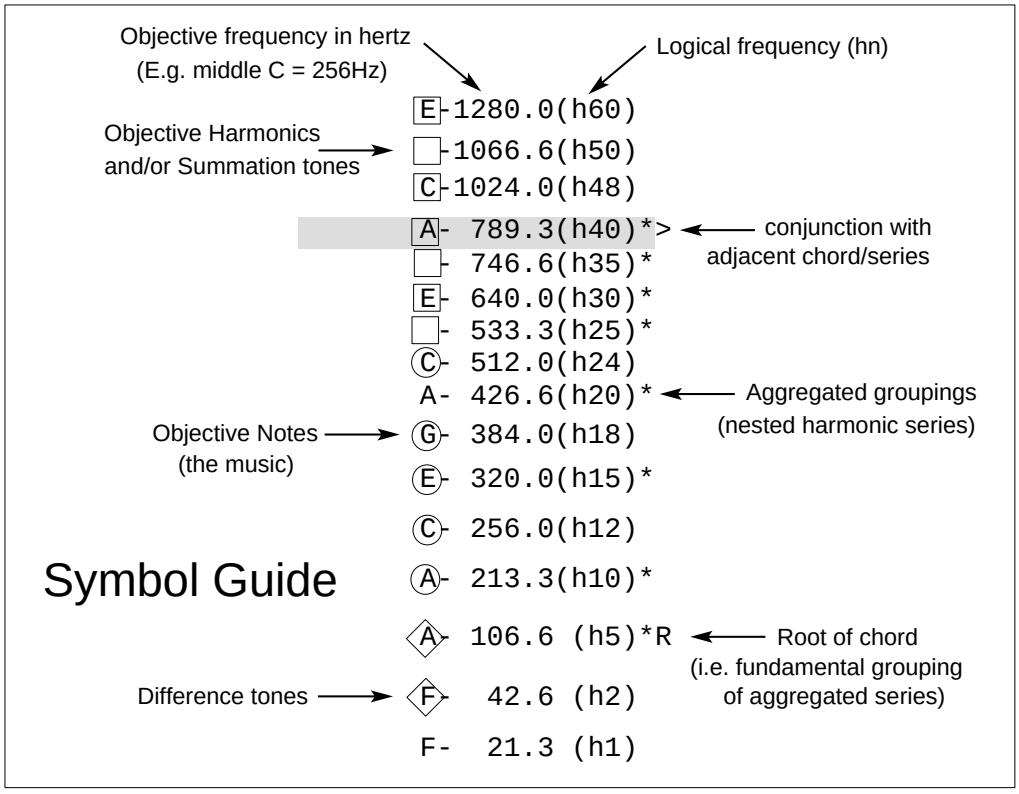
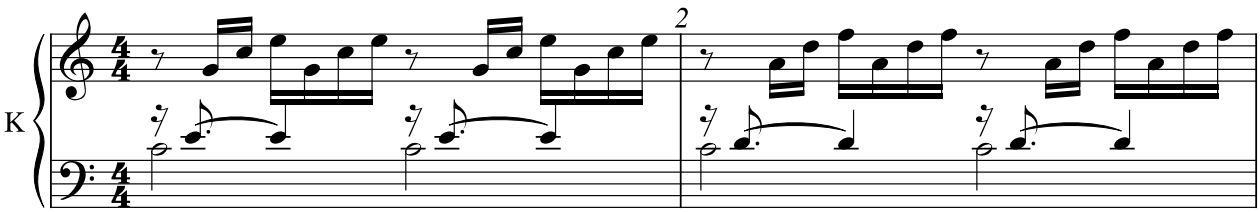
Example S
Prelude by J.S. Bach

MUTABLE NUMBER ANALYSIS

In the following pages the principles and techniques outlined in the main text of *Journey to the Heart of Music* are applied to Prelude No.1 in C-major from the *Well-tempered Clavier* by J.S. Bach, yielding an analysis of the prelude in terms of a dynamical modulating oscillatory system. This analysis originally made some years ago has to some extent been superseded by the 'new style' MOS/MBN analysis presented on the left-hand pages of Example S2 – as a companion and reference for comparison with the automatic computer generated analysis presented on Example S2's right-hand pages.



S.2 - PRELUDE, J.S. BACH



I ii7

Conjunctions

Objective Notes

Objective Harmonics and/or Subjective Summation Tones (not all shown)

Difference Tones (not all shown)

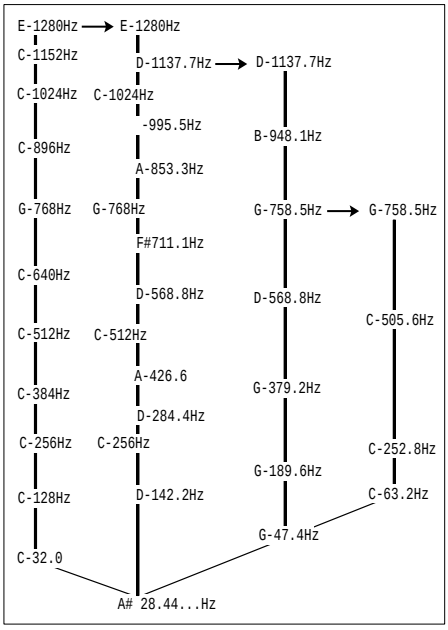
NOTES

1) The objective notes of the prelude are circled, eg. Ⓒ

2) The units of absolute frequency are in hertz, with mid C = 256Hz. Logical frequency is shown (hn).

3) Foreground/aggregated series are shown and described in black. Background/nested series are gray. The fundamental/nesting series built on C-1Hz (H1) is omitted. It is the upper level aggregated series which identifies the chordal roots.

4) In the box below are the configurations of harmonic series for the first four bars



E-1280(h40)*> → E-1280.0(h45)
-1248(h39) -1251.5(h44)
D#1216(h38) D#1223.1(h43)
-1184(h37) -1194.6(h42)
D-1152(h36)* -1166.2(h41)
-1120(h35) D-1137.7(h40)*> →
C#1088(h34) -1109.3(h39)
-1056(h33) C#1080.8(h38)
C-1024(h32)* -1052.4(h37)
- 992(h31) C-1024.0(h36)
B- 960(h30) - 995.5(h35)*
- 928(h29) B- 967.1(h34)
A# 896(h28)* - 938.6(h33)
- 864(h27) A# 910.2(h32)
A- 832(h26) - 881.7(h31)
G# 800(h25) A- 853.3(h30)*
G- 768(h24)* - 824.8(h29)
- 736(h23) G# 796.4(h28)
F# 704(h22) G- 768.0(h27)
F- 672(h21) - 739.5(h26)
Ⓔ- 640(h20)* F# 711.1(h25)*
D# 608(h19) Ⓕ- 682.6(h24)
D- 576(h18) - 654.2(h23)
C# 544(h17) E- 625.7(h22)
Ⓒ- 512(h16)* D# 597.3(h21)
B- 480(h15) Ⓓ- 568.8(h20)*
A# 448(h14) C# 540.4(h19)
A- 416(h13) C- 512.0(h18)
Ⓖ- 384(h12)* B- 483.5(h17)
F# 352(h11) A# 455.1(h16)
Ⓔ- 320(h10) Ⓐ- 426.6(h15)*
D- 288 (h9) G# 398.2(h14)
Ⓒ- 256 (h8)* G- 369.7(h13)
A# 224 (h7) F- 341.3(h12)
G- 192 (h6) E- 312.8(h11)
E- 160 (h5) Ⓓ- 284.4(h10)*
◇C- 128 (h4)*R Ⓒ- 256.0 (h9)
G- 96 (h3) A# 227.5 (h8)
◇C- 64 (h2) G# 199.1 (h7)
C- 32 (h1/H32) F- 170.6 (h6)
◇D- 142.2 (h5)*R
A# 113.7 (h4)
F- 85.3 (h3)
A# 56.8 (h2)
◇A# 28.4 (h1/H28)

top level Aggregated Series in black

(10 groups of 4)

--- 9:10 -->

(9 groups of 5)

(sesquinona modulation)

(–1 group of 5)

(8 groups of 5)

---3:4-->

(6 groups of 4)

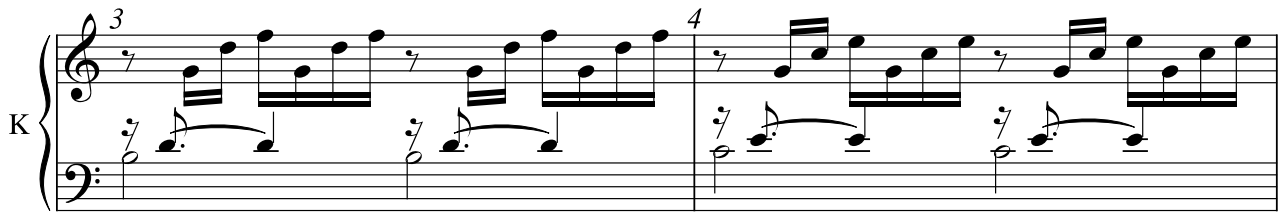
(sesquitertia modulation)

middle level Nested Series in gray

(5 x eight) ----------9:8---------> (5 x nine)->(–5 x one)
(sesquioctava 9:8 modulation)
-->(8 x five) --3:5-->
(3:5 modulation exchange)

Information and energy increase.....

S.3 - PRELUDE, J.S. BACH



V7

G-1517.0(h32)*
-1469.6(h31)
F#1422.2(h30)
-1374.8(h29)
F-1327.4(h28)*
E-1280.0(h27)
-1232.5(h26)
D#1185.1(h25)
D-1137.7(h24)*
-1090.3(h23)
C#1042.9(h22)
C- 995.5(h21)
B- 948.1(h20)*
A# 900.7(h19)
A- 853.3(h18)
G# 805.9(h17)
G- 758.5(h16)*>
F# 711.1(h15)
F- 663.7(h14)
E- 616.2(h13)
D- 568.8(h12)*
C# 521.4(h11)
B- 474.0(h10)
A- 426.6 (h9)
G- 379.2 (h8)*
F- 331.8 (h7)
D- 284.4 (h6)
B- 237.0 (h5)
G- 189.6 (h4)*R
D- 142.2 (h3)
G- 94.8 (h2)
G- 47.4 (h1/H48)

I

G-1517.0(h24)*
-1453.8(h23)
F#1390.6(h22)
F-1327.4(h21)
E-1264.1(h20)*
D#1200.9(h19)
D-1137.7(h18)
C#1074.5(h17)
C-1011.3(h16)*
B- 948.1(h15)
A# 884.9(h14)
A- 821.7(h13)
G- 758.5(h12)*>
F# 695.3(h11)
E- 632.0(h10)
D- 568.8 (h9)
C- 505.6 (h8)*
A# 442.4 (h7)
G- 379.2 (h6)
E- 316.0 (h5)
C- 252.8 (h4)*R
G- 189.6 (h3)
C- 126.4 (h2)
C- 63.2 (h1/H64)

G-1536.0(h48)**
- 1472.0(h46)
F#1408.0(h44)*
F-1344.0(h42)
E-1280.0(h40)**>
-1248.0(h39)
D#1216.0(h38)
-1184.0(h37)
D-1152.0(h36)*
-1120.0(h35)
C#1088.0(h34)
-1056.0(h33)
C-1024.0(h32)**
- 992.0(h31)
B- 960.0(h30)
- 928.0(h29)
A# 896.0(h28)*
- 864.0(h27)
A- 832.0(h26)
- 800.0(h25)
G- 768.0(h24)**
- 736.0(h23)
F# 704.0(h22)
F- 672.0(h21)
E- 640.0(h20)*
D# 608.0(h19)
D- 576.0(h18)
C# 544.0(h17)
C- 512.0(h16)**
B- 480.0(h15)
A# 448.0(h14)
A- 416.0(h13)
G- 384.0(h12)*
F# 352.0(h11)
E- 320.0(h10)
D- 288.0 (h9)
C- 256.0 (h8)**
A# 224.0 (h7)
G- 192.0 (h6)
E- 160.0 (h5)
C- 128.0 (h4)*R
G- 96.0 (h3)
C- 64.0 (h2)
C- 32.0 (h1/H32)

-----3:4-----> (6 groups of 4)
(–2 groups of 4)
(4 groups of 4) ----------3:4----------> (3 groups of 4)
(primary sesquitertia exchange)

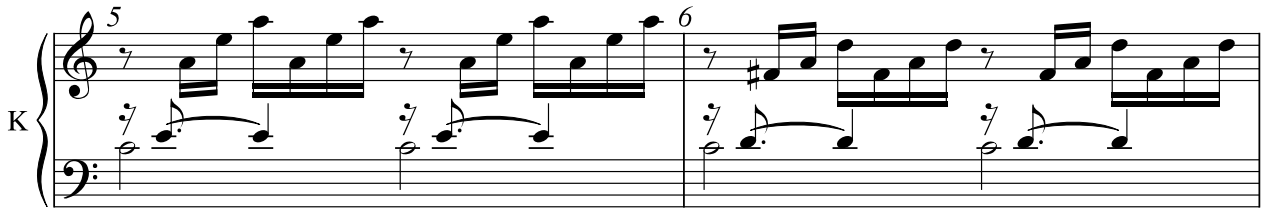
(10 groups of 4) --6:5-->
(+4 groups of 4)
---> (6 groups of 4)

and recalibrate
---2:1--->
to whole numbers

-----3:5------> (8 x three)
(–8 x one)
(4 x four) ----------3:4----------> (4 x three)
(quaternary sesquitertia exchange)

(20 x two) --3:2-->
(+16 x one)
-------> (8 x three)

...information and energy dissipated.....



vi

```
E-1280.0(h60)*
 -1173.3(h55)*
D-1152.0(h54)
C#1066.6(h50)*
C-1024.0(h48)
 - 960.0(h45)*
B- 896.0(h42)
A- 853.3(h40)*>
 - 832.0(h39)
G- 768.0(h36)
 - 746.6(h35)*
F# 725.3(h34)
 - 704.0(h33)
F- 682.6(h32)
 - 661.3(h31)
E- 640.0(h30)*
 - 618.6(h29)
D# 597.3(h28)
 - 576.0(h27)
D- 554.6(h26)
C# 533.3(h25)*
C- 512.0(h24)
 - 490.6(h23)
B- 469.3(h22)
A# 448.0(h21)
A- 426.6(h20)*
G# 405.3(h19)
G- 384.0(h18)
F# 362.6(h17)
F- 341.3(h16)
E- 320.0(h15)*
D# 298.6(h14)
D- 277.3(h13)
C- 256.0(h12)
B- 234.6(h11)
A- 213.3(h10)*
G- 192.0 (h9)
F- 170.6 (h8)
D# 149.3 (h7)
C- 128.0 (h6)
A- 106.6 (h5)*R
F-  85.3 (h4)
C-  64.0 (h3)
F-  42.6 (h2)
F-  21.3 (h1/H21)
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II7

```
E-1280.0(h36)*
D-1137.7(h32)*>
C- 995.5(h28)*
A# 888.8(h25)
A- 853.3(h24)*
-  817.7(h23)
G# 782.2(h22)
G- 746.6(h21)
F# 711.1(h20)*
F- 675.5(h19)
E- 639.9(h18)
D# 604.4(h17)
D- 568.8(h16)*
C# 533.3(h15)
C- 497.7(h14)
B- 462.2(h13)
A- 426.6(h12)*
G# 391.1(h11)
F# 355.5(h10)
E- 320.0 (h9)
D- 284.4 (h8)*
C- 248.8 (h7)
A- 213.3 (h6)
F# 177.7 (h5)
D- 142.2 (h4)*R
A- 106.6 (h3)
D-  71.1 (h2)
D-  35.5 (h1/H36)
```

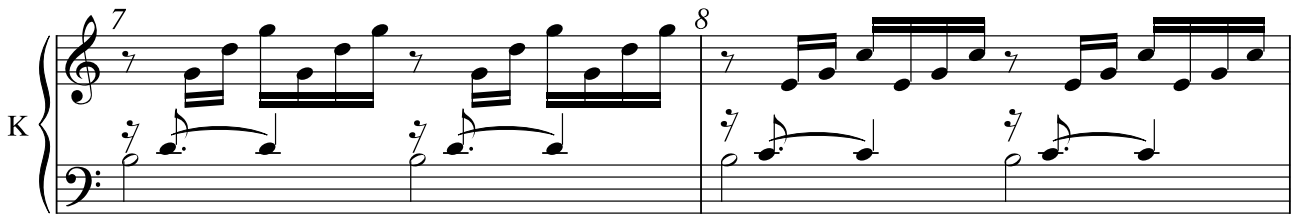
--6:5--> (12 groups of 5)
(–4 groups of 5)
(8 groups of 5) ----------3:4----------> (6 groups of 4)

(8 groups of 4) ----------3:4----------->
(+2 groups of 4)

--3:4--> (20 x three)
(–20 x one)
(8 x five) ----------3:5----------> (8 x three)

(8 x four) ----------3:4----------->
(+8 x one)

S.5 - PRELUDE, J.S. BACH



V I

D-1137.7(h24)*	
-1090.3(h23)	
C#1042.9(h22)	
C- 995.5(h21)	
B- 948.1(h20)*	
A# 900.7(h19)	
A- 853.3(h18)	
G# 805.9(h17)	
G- 758.5(h16)*>	G- 758.5(h12)*>
F# 711.1(h15)	F# 695.3(h11)
F- 663.7(h14)	
E- 616.2(h13)	E- 632.0(h10)
D- 568.8(h12)*	D- 568.8 (h9)
C# 521.4(h11)	C- 505.6 (h8)*
B- 474.0(h10)	
A- 426.6 (h9)	A# 442.4 (h7)
G- 379.2 (h8)*	G- 379.2 (h6)
F- 331.8 (h7)	
D- 284.4 (h6)	E- 316.0 (h5)
B- 237.0 (h5)--suspension---------->	C- 252.8 (h4)*R
G- 189.6 (h4)*R	G- 189.6 (h3)
D- 142.2 (h3)	C- 126.4 (h2)
G- 94.8 (h2)	
G- 47.4 (h1/H48)	C- 63.2 (h1/H64)

E-1280.0(h40)**>
-1248.0(h39)
D#1216.0(h38)
-1184.0(h37)
D-1152.0(h36)*
-1120.0(h35)
C#1088.0(h34)
-1056.0(h33)
C-1024.0(h32)**
- 992.0(h31)
B- 960.0(h30)
- 928.0(h29)
A# 896.0(h28)*
- 864.0(h27)
A- 832.0(h26)
- 800.0(h25)
G- 768.0(h24)**
- 736.0(h23)
F# 704.0(h22)
F- 672.0(h21)
E- 640.0(h20)*
D# 608.0(h19)
D- 576.0(h18)
C# 544.0(h17)
C- 512.0(h16)**
B- 480.0(h15)
A# 448.0(h14)
A- 416.0(h13)
G- 384.0(h12)*
F# 352.0(h11)
E- 320.0(h10)
D- 288.0 (h9)
C- 256.0 (h8)**
A# 224.0 (h7)
G- 192.0 (h6)
E- 160.0 (h5)
C- 128.0 (h4)*R
G- 96.0 (h3)
C- 64.0 (h2)
C- 32.0 (h1/H32)

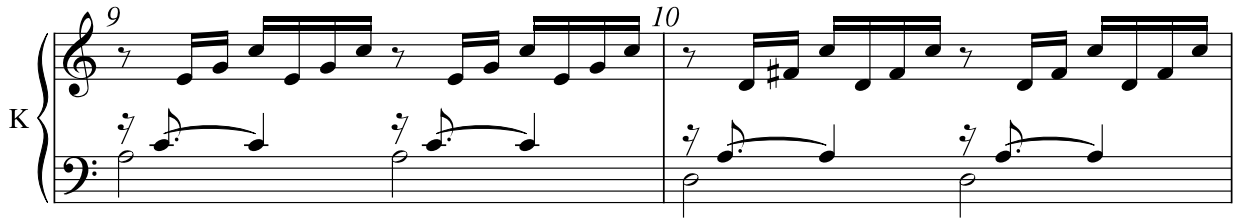
-----3:4-----> (6 groups of 4)
(–2 groups of 4)
(4 groups of 4) ----------3:4----------> (3 groups of 4)

(10 groups of 4) --6:5-->
(+4 groups of 4)
---> (6 groups of 4)

and recalibrate
---2:1--->
to whole numbers

-----3:5------> (8 x three)
(–8 x one)
(4 x four) ----------3:4----------> (4 x three)

(20 x two) --3:2-->
(+16 x one)
-------> (8 x three)



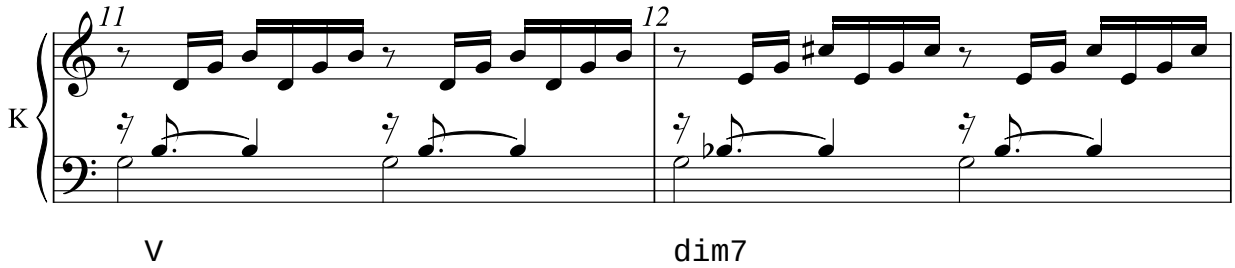
vi7	II7
E-1280.0(h60)*	E-1280.0(h36)*
-1173.3(h55)*	
D-1152.0(h54)	D-1137.7(h32)*
C#1066.6(h50)*	
C-1024.0(h48)	C- 995.5(h28)*
- 960.0(h45)*	
B- 896.0(h42)	A# 888.8(h25)
A- 853.3(h40)*>	A- 853.3(h24)*
- 832.0(h39)	- 817.7(h23)
G- 768.0(h36)	G# 782.2(h22)
- 746.6(h35)*	G- 746.6(h21)
F# 725.3(h34)	F# 711.1(h20)*
- 704.0(h33)	
F- 682.6(h32)	F- 675.5(h19)
- 661.3(h31)	
E- 640.0(h30)*	E- 639.9(h18)
- 618.6(h29)	
D# 597.3(h28)	D# 604.4(h17)
- 576.0(h27)	
D- 554.6(h26)	D- 568.8(h16)*>
C# 533.3(h25)*	C# 533.3(h15)
C- 512.0(h24)	C- 497.7(h14)
- 490.6(h23)	
B- 469.3(h22)	B- 462.2(h13)
A# 448.0(h21)	
A- 426.6(h20)*	A- 426.6(h12)*
G# 405.3(h19)	G# 391.1(h11)
G- 384.0(h18)	F# 355.5(h10)
F# 362.6(h17)	
F- 341.3(h16)	E- 320.0 (h9)
E- 320.0(h15)*	
D# 298.6(h14)	D- 284.4 (h8)*
D- 277.3(h13)	
C- 256.0(h12)	C- 248.8 (h7)
B- 234.6(h11)	
A- 213.3(h10)*	A- 213.3 (h6)
G- 192.0 (h9)	F# 177.7 (h5)
F- 170.6 (h8)	
D# 149.3 (h7)	D- 142.2 (h4)*R
C- 128.0 (h6)	A- 106.6 (h3)
A- 106.6 (h5)*R	D- 71.1 (h2)
F- 85.3 (h4)	D- 35.5 (h1/H36)
C- 64.0 (h3)	
F- 42.6 (h2)	
F- 21.3 (h1/H21)	

--6:5--> (12 groups of 5)
(–4 groups of 5)
(8 groups of 5) ----------3:4----------> (6 groups of 4)

(4 groups of 4) ----------3:2----------->
(–2 groups of 4)

--3:4--> (20 x three)
(–20 x one)
(8 x five) ----------3:5----------> (8 x three)

(8 x two) ----------3:2----------->
(–8 x one)



D-568.8(h24)*>	D-568.8(h30)*?>
-545.1(h23)	-549.9(h29)
C#521.4(h22)	C#530.9(h28)
C-497.7(h21)	C-512.0(h27)
B-474.0(h20)*	-493.0(h26)
A#450.3(h19)	B-474.0(h25)*?
A-426.6(h18)	A#455.1(h24)
G#402.9(h17)	-436.1(h23)
G-379.2(h16)*	A-417.1(h22)
F#355.5(h15)	G#398.2(h21)
F-331.8(h14)	G-379.2(h20)*?
E-308.1(h13)	F#360.2(h19)
D-284.4(h12)*	F-341.3(h18)
C#260.7(h11)	E-322.3(h17)
B-237.0(h10)	D#303.4(h16)
A-213.3 (h9)	D-284.4(h15)*?
G-189.6 (h8)*	C#265.4(h14)
F-165.9 (h7)	C-246.5(h13)
D-142.2 (h6)	A#227.5(h12)
B-118.5 (h5)	A-208.5(h11)
G- 94.8 (h4)*R	G-189.6(h10)*?
D- 71.1 (h3)	F-170.6 (h9)
G- 47.4 (h2)	D#151.7 (h8)
G- 23.7 (h1/H24)	C#132.7 (h7)
	A#113.7 (h6)
	G- 94.8 (h5)*?
	D# 75.8 (h4)
	A# 56.8 (h3)
	D# 37.9 (h2)
	D# 18.9 (h1/H19)

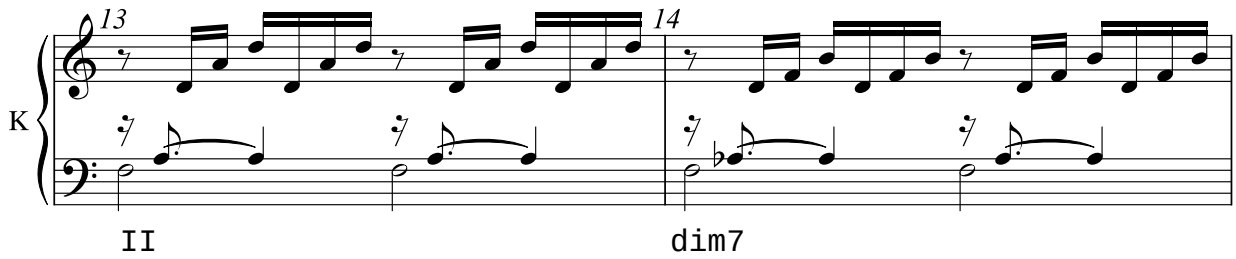
--3:2--> (6 groups of 4) ----------1:1----------> (6 groups of 5) ------4:3--->

No clear pattern of aggregates to create a root, factors: G-h2x5, A#h4x3, E-h17, G-h4x5, C#h4x7; maybe some residual carry-over from previous chord?

--3:2--> (8 x three)

(6 x four) ----------5:4----------> (6 x five)

(10 x three) ------4:3--->

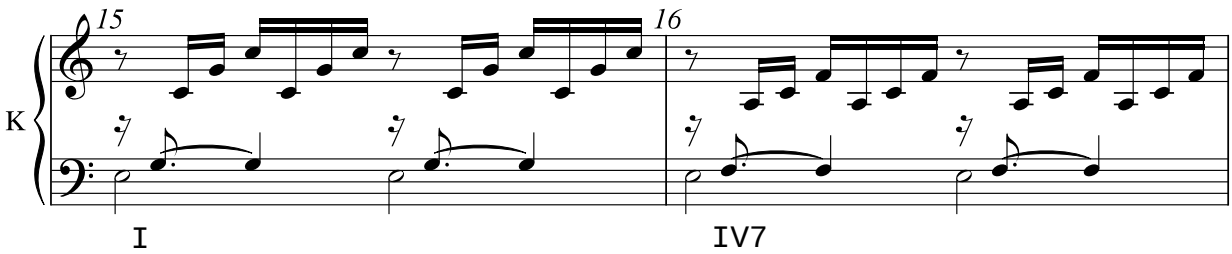


D-568.8(h40)*>	D-568.8(h40)
-554.6(h39)	-554.6(h39)
C#540.4(h38)	C#540.4(h38)
-526.2(h37)	-526.2(h37)
C-512.0(h36)	C-512.0(h36)>
-497.7(h35)*	-497.7(h35)
B-483.5(h34)	B-483.5(h34)
-469.3(h33)	-469.3(h33)
A#455.1(h32)	A#455.1(h32)
-440.8(h31)	-440.8(h31)
A-426.6(h30)*	A-426.6(h30)
-412.4(h29)	-412.4(h29)
G#398.2(h28)	G#398.2(h28)
G-384.0(h27)	G-384.0(h27)
-369.7(h26)	-369.7(h26)
F#355.5(h25)*	F#355.5(h25)
F-341.3(h24)	F-341.3(h24)
-327.1(h23)	-327.6(h23)
E-312.8(h22)	E-312.8(h22)
D#298.6(h21)	D#298.6(h21)
D-284.4(h20)*	D-284.4(h20)
C#270.2(h19)	C#270.2(h19)
C-256.0(h18)	C-256.0(h18)
B-241.7(h17)	B-241.7(h17)
A#227.5(h16)	A#227.5(h16)
A-213.3(h15)*	A-213.3(h15)
G#199.1(h14)	G#199.1(h14)
G-184.8(h13)	G-184.8(h13)
F-170.6(h12)	F-170.6(h12)
E-156.4(h11)	E-156.4(h11)
D-142.2(h10)*	D-142.2(h10)
C-128.0 (h9)	C-128.0 (h9)
A#113.7 (h8)	A#113.7 (h8)
G# 99.5 (h7)	G# 99.5 (h7)
F- 85.3 (h6)	F- 85.3 (h6)
D- 71.1 (h5)*R	D- 71.1 (h5)
A# 56.8 (h4)	A# 56.8 (h4)
F- 42.6 (h3)	F- 42.6 (h3)
A# 28.4 (h2)	A# 28.4 (h2)
A# 14.2 (h1/H14)	A# 14.2 (h1/H14)

--4:3--> (8 groups of 5).....

No foreground pattern of aggregates from non-powers-of-two factors, i.e. 3, 5, 7 and 17.

--4:3--> (10 x four) ----------> (-4 x one) --> (4 x nine) ------8:9------->

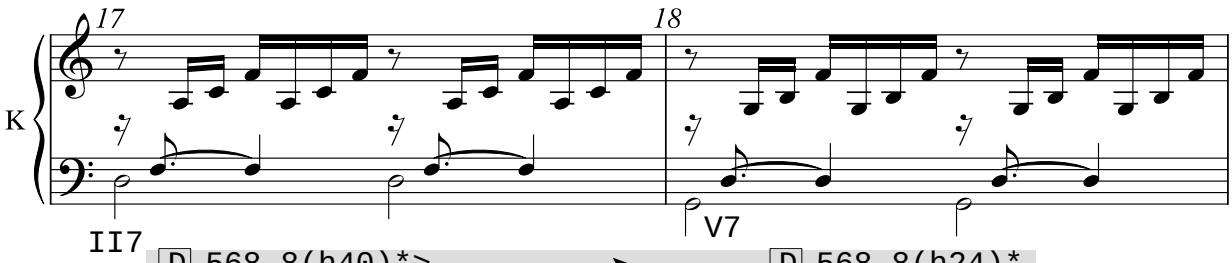


C-512.0(h32)*>	C-512.0(h36)*
-496.0(h31)	-497.7(h35)
B-480.0(h30)	B-483.5(h34)
-464.0(h29)	-469.3(h33)
A#448.0(h28)	A#455.1(h32)
-432.0(h27)	-440.8(h31)
A-416.0(h26)	A-426.6(h30)*>
G#400.0(h25)	-412.4(h29)
G-384.0(h24)*	G#398.2(h28)
-368.0(h23)	G-384.0(h27)
F#352.0(h22)	-369.7(h26)
F-336.0(h21)	F#355.5(h25)
E-320.0(h20)	F-341.3(h24)*
D#304.0(h19)	-327.1(h23)
D-288.0(h18)	E-312.8(h22)
C#272.0(h17)	D#298.6(h21)
C-256.0(h16)*	D-284.4(h20)
B-240.0(h15)	C#270.2(h19)
A#224.0(h14)	C-256.0(h18)*
A-208.0(h13)	B-241.7(h17)
G-192.0(h12)	A#227.5(h16)
F#176.0(h11)	A-213.3(h15)
E-160.0(h10)	G#199.1(h14)
D-144.0 (h9)	G-184.8(h13)
C-128.0 (h8)*R	F-170.6(h12)*
A#112.0 (h7)	E-156.4(h11)
G- 96.0 (h6)	D-142.2(h10)
E- 80.0 (h5)	C-128.0 (h9)
C- 64.0 (h4)	A#113.7 (h8)
G- 48.0 (h3)	G# 99.5 (h7)
C- 32.0 (h2)	F- 85.3 (h6)*R
C- 16.0 (h1/H16)	D- 71.1 (h5)
	A# 56.8 (h4)
	F- 42.6 (h3)
	A# 28.4 (h2)
	A# 14.2 (h1/H14)

.....(4 groups of 8) ----------3:2(6:4)----------> (6 groups of 6)
(–1 group of 6)
(5 groups of 6) -------6:5------>

---8:9----> (4 x eight) ----------9:8----------> (4 x nine) (–6 x one) (6 x five) -------->

S.10 - PRELUDE, J.S. BACH



D-568.8(h40)*>
-554.6(h39)
C#540.4(h38)
-526.2(h37)
C-512.0(h36)
-497.7(h35)*
B-483.5(h34)
-469.3(h33)
A#455.1(h32)
-440.8(h31)
A-426.6(h30)*
-412.4(h29)
G#398.2(h28)
G-384.0(h27)
-369.7(h26)
F#355.5(h25)*
F-341.3(h24)
-327.1(h23)
E-312.8(h22)
D#298.6(h21)
D-284.4(h20)*
C#270.2(h19)
C-256.0(h18)
B-241.7(h17)
A#227.5(h16)
A-213.3(h15)*
G#199.1(h14)
G-184.8(h13)
F-170.6(h12)
E-156.4(h11)
D-142.2(h10)*
C-128.0 (h9)
A#113.7 (h8)
G# 99.5 (h7)
F- 85.3 (h6)
D- 71.1 (h5)*R
A# 56.8 (h4)
F- 42.6 (h3)
A# 28.4 (h2)
A# 14.2 (h1/H14)

D-568.8(h24)*
-545.1(h23)
C#521.4(h22)
C-497.7(h21)
B-474.0(h20)*
A#450.3(h19)
A-426.6(h18)
G#402.9(h17)
G-379.2(h16)*>
F#355.5(h15)
F-331.8(h14)
E-308.1(h13)
D-284.4(h12)*
C#260.7(h11)
B-237.0(h10)
A-213.3 (h9)
G-189.6 (h8)*
F-165.9 (h7)
D-142.2 (h6)
B-118.5 (h5)
G- 94.8 (h4)*R
D- 71.1 (h3)
G- 47.4 (h2)
G- 23.7 (h1/H24)

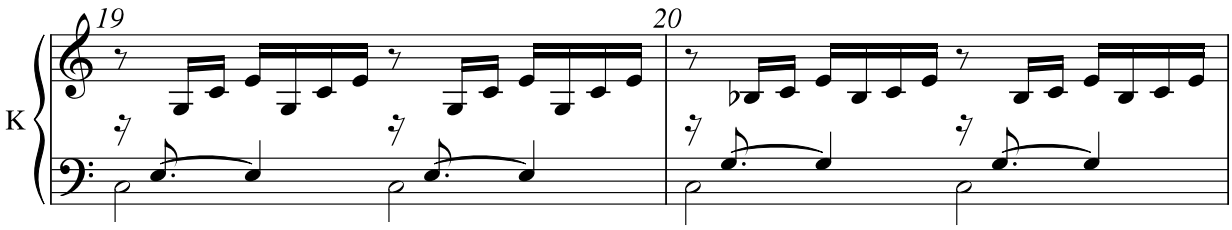
(+2 groups of 5)(8 groups of 5) ----------3:4----------> (6 groups of 4)

(–2 groups of 4)(4 groups of 4) ---3:4-->

--6:5--> (6 groups of 5)

(–8 x one)(4 x four) --------3:4-------> ------> (+10 x one) (8 x five) ----------3:5----------> (8 x three)

S.11 - PRELUDE, J.S. BACH



G- 768.0(h48)*> higher conjunction
- 752.0(h47)
- 736.0(h46)
- 720.0(h45)
F# 704.0(h44)*
- 688.0(h43)
F- 672.0(h42)
- 656.0(h41)
E- 640.0(h40)*> higher conjunction
- 624.0(h39)
D# 608.0(h38)
- 592.0(h37)
D- 576.0(h36)*
- 560.0(h35)
C# 544.0(h34)
- 528.0(h33)
C- 512.0(h32)*> higher conjunction
- 496.0(h31)
B- 480.0(h30)
- 464.0(h29)
A# 448.0(h28)*
- 432.0(h27)
A- 416.0(h26)
G# 400.0(h25)
G- 384.0(h24)*>
- 368.0(h23)
F# 352.0(h22)
F- 336.0(h21)
E- 320.0(h20)*
D# 304.0(h19)
D- 288.0(h18)
C# 272.0(h17)
C- 256.0(h16)*
B- 240.0(h15)
A# 224.0(h14)
A- 208.0(h13)
G- 192.0(h12)*
F# 176.0(h11)
E- 160.0(h10)
D- 144.0 (h9)
C- 128.0 (h8)*
A# 112.0 (h7)
G- 96.0 (h6)
E- 80.0 (h5)
C- 64.0 (h4)*R
G- 48.0 (h3)
C- 32.0 (h2)
C- 16.0 (h1/H16)

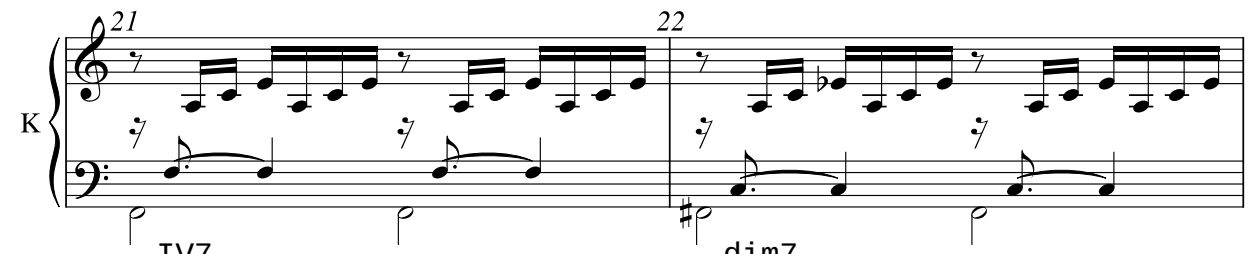
G-379.2(h12)*>
F#347.6(h11)
E-316.0(h10)
D-284.4 (h9)
C-252.8 (h8)*
A#221.2 (h7)
G-189.6 (h6)
E-158.0 (h5)
C-126.4 (h4)*R
G- 94.8 (h3)
C- 63.2 (h2)
C- 31.6 (h1/H32)

---3:4-----> (3 groups of 4) ---------->
---3:4---> (4 x three)(6 x two) --------->

and recalibrate
---2:1--->
to whole numbers

---> (6 groups of 4) ----------3:2------>
---> (6 x four) ----------3:4------->

S.12 - PRELUDE, J.S. BACH



IV7

G- 768.0(h36)*
- 746.6(h35)
- 725.3(h34)*
- 704.0(h33)
F- 682.6(h32)*
- 661.3(h31)
E- 640.0(h30)*
- 618.6(h29)
D# 597.3(h28)*
D- 576.0(h27)
C# 554.6(h26)*
- 533.3(h25)
C- 512.0(h24)*
- 490.6(h23)
B- 469.3(h22)*
A# 448.0(h21)
A- 426.6(h20)*
G# 405.3(h19)
G- 384.0(h18)*>
F# 362.6(h17)
F- 341.3(h16)*
E- 320.0(h15)
D# 298.6(h14)*
D- 277.3(h13)
C- 256.0(h12)*
B- 234.6(h11)
A- 213.3(h10)*
G- 192.0 (h9)
F- 170.6 (h8)*
D# 149.3 (h7)
C- 128.0 (h6)*
A- 106.6 (h5)
F- 85.5 (h4)*
C- 64.0 (h3)
F- 42.6 (h2)*R
F- 21.3 (h1/H21)

dim7

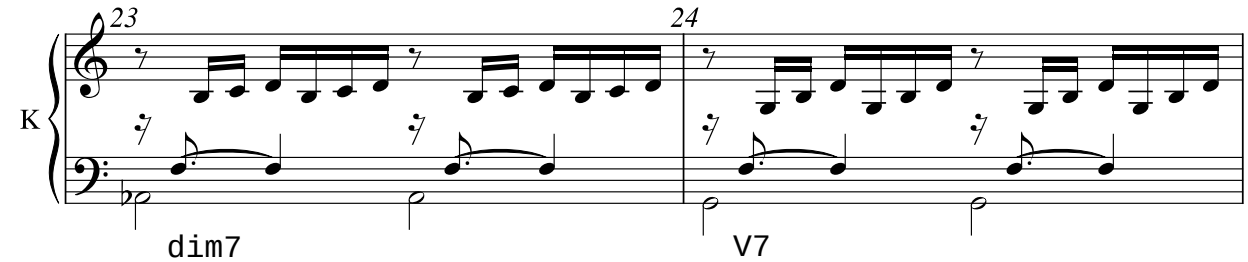
G- 384.0(h48)>
-376.0(h47)
-368.0(h46)
-360.0(h45)
F#352.0(h44)
-344.0(h43)
F-336.0(h42)
-328.0(h41)
E-320.0(h40)
-312.0(h39)
D#304.0(h38)
-296.0(h37)
D-288.0(h36)
-280.0(h35)
C#272.0(h34)
-264.0(h33)
C-256.0(h32)
-248.0(h31)
B-240.0(h30)
-232.0(h29)
A#224.0(h28)
-216.0(h27)
A-208.0(h26)
G#200.0(h25)
G-192.0(h24)
-184.0(h23)
F#176.0(h22)
F-168.0(h21)
E-160.0(h20)
D#152.0(h19)
D-144.0(h18)
C#136.0(h17)
C-128.0(h16)
B-120.0(h15)
A#112.0(h14)
A-104.0(h13)
G- 96.0(h12)
F# 88.0(h11)
E- 80.0(h10)
D- 72.0 (h9)
C- 64.0 (h8)
A# 56.0 (h7)
G- 48.0 (h6)
E- 40.0 (h5)
C- 32.0 (h4)
G- 24.0 (h3)
C- 16.0 (h2)
C- 8.0 (h1/H8)

No pattern of aggregates, factors 2, 11, 13 and 19.

---3:2---> (9 groups of 2).....

---3:4---> (6 x three) ----------8:3----------> (6 x eight) (3 x sixteen) ---------9:16------>

S.13 - PRELUDE, J.S. BACH



dim7 V7

D-568.8(h40)> → D-568.8(h24)*

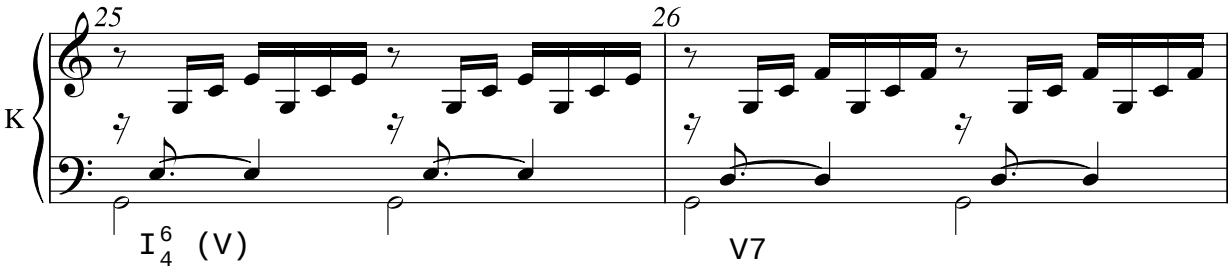
-554.6(h39)
C#540.4(h38)
-526.2(h37)
C-512.0(h36)
-497.7(h35)
B-483.5(h34)
-469.3(h33)
A#455.1(h32)
-440.8(h31)
A-426.6(h30)
-412.4(h29)
G#398.2(h28)
→ G-384.0(h27)
-369.7(h26)
F#355.5(h25)
F-341.3(h24)
-327.1(h23)
E-312.8(h22)
D#298.6(h21)
D-284.4(h20)
C#270.2(h19)
suspension → C-256.0(h18) → resolution
B-241.7(h17)
A#227.5(h16)
A-213.3(h15)
G#199.1(h14)
G-184.8(h13)
F-170.6(h12)
E-156.4(h11)
D-142.2(h10)
C-128.0 (h9)
A#113.7 (h8)
G# 99.5 (h7)
F- 85.3 (h6)
D- 71.1 (h5)
A# 56.8 (h4)
F- 42.6 (h3)
A# 28.4 (h2)
A# 14.2 (h1/H14)

-545.1(h23)
C#521.4(h22)
C-497.7(h21)
B-474.0(h20)*
A#450.3(h19)
A-426.6(h18)
G#402.9(h17)
G-379.2(h16)*> →
F#355.5(h15)
F-331.8(h14)
E-308.1(h13)
D-284.4(h12)*
C#260.7(h11)
B-237.0(h10)
A-213.3 (h9)
G-189.6 (h8)*
F-165.9 (h7)
D-142.2 (h6)
B-118.5 (h5)
G- 94.8 (h4)*R
D- 71.1 (h3)
G- 47.4 (h2)
G- 23.7 (h1/H24)

---9:16----> (3 x nine)
(+13 x one)
(8 x five) ----------3:5----------> (8 x three)

(6 groups of 4)(–2 groups of 4)(4 groups of 4) --3:4->

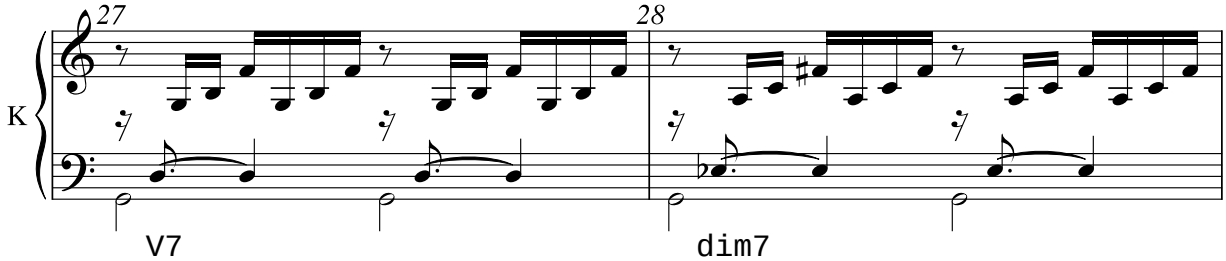
(–8 x one)-->(4 x four) -----3:4--->



D-568.8(h18)	D-568.8(h24)
C#537.2(h17)	-545.1(h23)
	C#521.4(h22)
C-505.6(h16)*	C-497.7(h21)
B-474.0(h15)	B-474.0(h20)
A#442.4(h14)	A#450.3(h19)
	A-426.6(h18)
A-410.8(h13)	G#402.9(h17)
→ G-379.2(h12)*> →	G-379.2(h16)*> →
F#347.6(h11)	F#355.5(h15)
	F-331.8(h14)
E-316.0(h10)	E-308.1(h13)
D-284.4 (h9)	D-284.4(h12)*
	C#260.7(h11)
C-252.8 (h8)* ----suspension---------->	
	B-237.0(h10)
A#221.2 (h7)	A-213.3 (h9)
G-189.6 (h6)	G-189.6 (h8)*
	F-165.9 (h7)
E-158.0 (h5)	D-142.2 (h6)
C-126.4 (h4)*R	B-118.5 (h5)
G- 94.8 (h3)	G- 94.8 (h4)*R
C- 63.2 (h2)	D- 71.1 (h3)
	G- 47.4 (h2)
C- 31.6 (h1/H32)	G- 23.7 (h1/H24)

---3:4-----> (3 groups of 4) ----------4:3----------> (4 groups of 4) -----1:1--->

----3:4------> (4 x three) ----------4:3----------> (4 x four) -------1:1----->

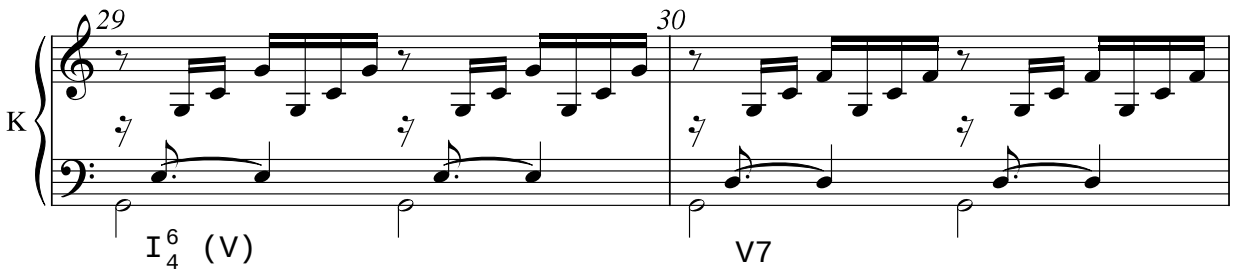


D-568.8(h24)*	D-568.8(h30)
-545.1(h23)	-549.9(h29)
C#521.4(h22)	C#530.9(h28)
C-497.7(h21)	C-512.0(h27)
	-493.0(h26)
B-474.0(h20)*	B-474.0(h25)
A#450.3(h19)	A#455.1(h24)
A-426.6(h18)	-436.1(h23)
	A-417.1(h22)
G#402.9(h17)	G#398.2(h21)
→ G-379.2(h16)*> →	G-379.2(h20)> →
F#355.5(h15)	F#360.2(h19)
F-331.8(h14)	F-341.3(h18)
	E-322.3(h17)
E-308.1(h13)	D#303.4(h16)
D-284.4(h12)*	D-284.4(h15)
C#260.7(h11)	C#265.4(h14)
B-237.0(h10)	C-246.5(h13)
	A#227.5(h12)
A-213.3 (h9)	A-208.5(h11)
G-189.6 (h8)*	G-189.6(h10)
F-165.9 (h7)	F-170.6 (h9)
D-142.2 (h6)	D#151.7 (h8)
	C#132.7 (h7)
B-118.5 (h5)	A#113.7 (h6)
G- 94.8 (h4)*R	G- 94.8 (h5)
D- 71.1 (h3)	D# 75.8 (h4)
G- 47.4 (h2)	A# 56.8 (h3)
G- 23.7 (h1/H24)	D# 37.9 (h2)
	D# 18.9 (h1/H19)

No pattern of aggregates, in note relationships, i.e. 5, 8, 11, 13 and 19.

--1:1--> (4 groups of 4)

---1:1-----> (4 x four) ----------5:4----------> (4 x five) --------6:5---->

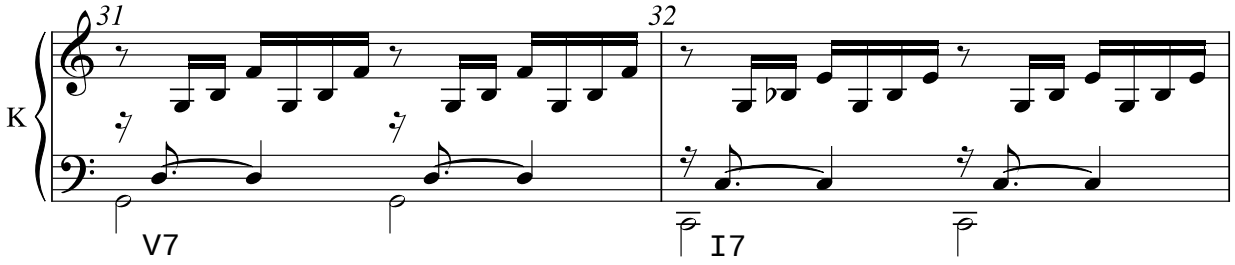


G-379.2(h24)*>	G-379.2(h24)*>
-363.4(h23)	-363.4(h23)
F#347.6(h22)	F#347.6(h22)
F-331.8(h21)	F-331.8(h21)*
E-316.0(h20)*	E-316.0(h20)
D#300.2(h19)	D#300.2(h19)
D-284.4(h18)	D-284.4(h18)*
C#268.6(h17)	C#268.6(h17)
C-252.8(h16)*suspension------>	C-252.8(h16)
B-237.0(h15)	B-237.0(h15)*
A#221.2(h14)	A#221.2(h14)
A-205.4(h13)	A-205.4(h13)
G-189.6(h12)*	G-189.6(h12)*
F#173.8(h11)	F#173.8(h11)
E-158.0(h10)	E-158.0(h10)
D-142.2 (h9)	D-142.2 (h9)*
C-126.4 (h8)*	C-126.4 (h8)
A#110.6 (h7)	A#110.6 (h7)
G- 94.8 (h6)	G- 94.8 (h6)*
E- 79.0 (h5)	E- 79.0 (h5)
C- 63.2 (h4)*R	C- 63.2 (h4)
G- 47.4 (h3)	G- 47.4 (h3)*R
C- 31.6 (h2)	C- 31.6 (h2)
C- 15.8 (h1/H16)	C- 15.8 (h1/H16)

(6 groups of 4) ----------4:3----------> (8 groups of 3) ----------1:1----->

-----6:5-----> (4 x six) ----------> (8 x three) ----------2:3------>

S.17 - PRELUDE, J.S. BACH



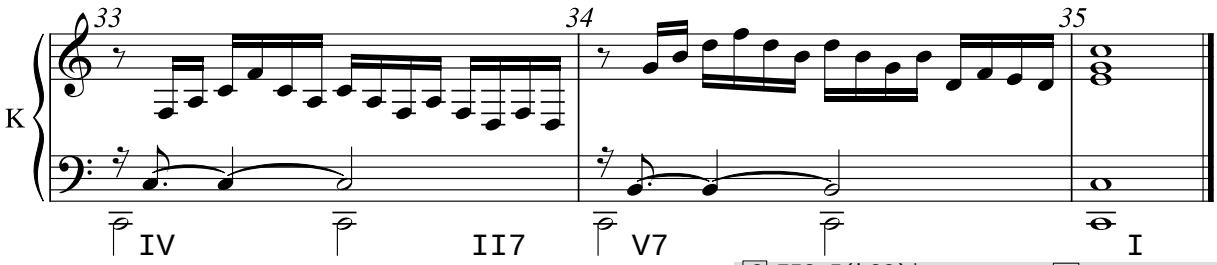
			D- 576.0(h18)*
			C# 544.0(h17)
			C- 512.0(h16)*
			B- 480.0(h15)
			A# 448.0(h14)*
			A- 416.0(h13)
→	G-379.2(h16)*>	→ G-379.2(h12)*>	→ G- 384.0(h12)*> →
	F#355.5(h15)	F#347.6(h11)	F# 352.0(h11)
	F-331.8(h14)*		
	E-308.1(h13)	E-316.0(h10)*	E- 320.0(h10)*
	D-284.4(h12)*	D-284.4 (h9)	D- 288.0 (h9)
	C#260.7(h11)	C-252.8 (h8)*	C- 256.0 (h8)*
	B-237.0(h10)*		
	A-213.3 (h9)	A#221.2 (h7)	A# 224.0 (h7)
	G-189.6 (h8)*	G-189.6 (h6)*	G- 192.0 (h6)*
	F-165.9 (h7)	E-158.0 (h5)	E- 160.0 (h5)
	D-142.2 (h6)*		
	B-118.5 (h5)	C-126.4 (h4)*	C- 128.0 (h4)*
	G- 94.8 (h4)*	G- 94.8 (h3)	G- 96.0 (h3)
	D- 71.1 (h3)	C- 63.2 (h2)*R	C- 64.0 (h2)*R
	G- 47.4 (h2)*R	C- 31.6 (h1/H32)	C- 32.0 (h1/H32)
	G- 23.7 (h1/H24)		

---1:1---> (8 groups of 2) ----------3:4----------> (6 groups of 2) *(6 groups of 2) --3:2-->*

recalibrate to
to whole numbers

-----2:3---> (8 x two)(4 x four) ----------3:4----------> (4 x three) (2 x six) --3:2-->

S.18 - PRELUDE, J.S. BACH



		G-758.5(h32)*> →	G-758.5(h24)*
		-734.8(h31)	-726.9(h23)
		F#711.1(h30)	F#695.3(h22)*
		-687.4(h29)	F-663.7(h21)
		F-663.7(h28)*	E-632.0(h20)*
		E-640.0(h27)	D#600.4(h19)
		-616.2(h26)	D-568.8(h18)*
		D#592.5(h25)	C#537.2(h17)
D- 576.0(h27)	D-568.8(h40)*> →	D-568.8(h24)*	C-505.6(h16)*
C# 554.6(h26)*	-554.6(h39)	-545.1(h23)	B-474.0(h15)
- 533.3(h25)	C#540.4(h38)	C#521.4(h22)	A#442.4(h14)*
C- 512.0(h24)*	-526.2(h37)	C-497.7(h21)	A-410.8(h13)
- 490.6(h23)	C-512.0(h36)	B-474.0(h20)*	G-379.2(h12)*
B- 469.3(h22)*	-497.7(h35)*	A#450.3(h19)	F#347.6(h11)
A# 448.0(h21)	B-483.5(h34)	A-426.6(h18)	E-316.0(h10)*
A- 426.6(h20)*	-469.3(h33)	G#402.9(h17)	D-284.4 (h9)
G# 405.3(h19)	A#455.1(h32)	G-379.2(h16)*	C-252.8 (h8)*
→ G- 384.0(h18)*	-440.8(h31)	F#355.5(h15)	A#221.2 (h7)
F# 362.6(h17)	A-426.6(h30)*	F-331.8(h14)	G-189.6 (h6)*
F- 341.3(h16)*	-412.4(h29)	E-308.1(h13)	E-158.0 (h5)
E- 320.0(h15)	G#398.2(h28)	D-284.4(h12)*	C-126.4 (h4)*
D# 298.6(h14)*	G-384.0(h27)	C#260.7(h11)	G- 94.8 (h3)
D- 277.3(h13)	-369.7(h26)	B-237.0(h10)	C- 63.2 (h2)*R
C- 256.0(h12)*	F#355.5(h25)*	A-213.3 (h9)	C- 31.6 (h1/H32)
B- 234.6(h11)	F-341.3(h24)	G-189.6 (h8)*	
A- 213.3(h10)*> →	-327.1(h23)	F-165.9 (h7)	
G- 192.0 (h9)	E-312.8(h22)	D-142.2 (h6)	
F- 170.6 (h8)*	D#298.6(h21)	B-118.5 (h5)	
D# 149.3 (h7)	D-284.4(h20)*	G- 94.8 (h4)*R	
C- 128.0 (h6)*	C#270.2(h19)	D- 71.1 (h3)	
A- 106.6 (h5)	C-256.0(h18)	G- 47.4 (h2)	
F- 85.5 (h4)*	B-241.7(h17)	G- 23.7 (h1/H24)	
C- 64.0 (h3)	A#227.5(h16)		
F- 42.6 (h2)*R	A-213.3(h15)*		
F- 21.3 (h1/H21)	G#199.1(h14)		
	G-184.8(h13)		
	F-170.6(h12)		
	E-156.4(h11)		
	D-142.2(h10)*		
	C-128.0 (h9)		
	A#113.7 (h8)		
	G# 99.5 (h7)		
	F- 85.3 (h6)		
	D- 71.1 (h5)*R		
	A# 56.8 (h4)		
	F- 42.6 (h3)		
	A# 28.4 (h2)		
	A# 14.2 (h1/H14)		

-3:2->(9 groups of 2)
(–4 groups of 2)
(5 groups of 2) ---------3:5-------> (3 groups of 5)

(+5 groups of 5)(8 groups of 5) --3:4--> (6 groups of 4)

(8 groups of 4) ------3:2-----> (12 groups of 2)
(+2 groups of 4)

(+8 x one)(8 x four) -------3:4-------> (8 x three)

--3:2-> (6 x three)(-8 x one)(5 x two)-3:2->(5 x three)(+25 x one)(10 x four)--3:5-->(6 x four)