luminous

I should begin this brief explanation with the admission that I can't actually remember a lot of the more detailed decisions I made while writing **luminous** (it was during lockdown. Who remembers lockdown?!). So I'm just passing over those things in silence. You might be able to work it out yourself from the maps below and the score, but I'm afraid I don't have time to do that... Hopefully all this is of some help and interest, at least.

Also, certain interior details of the piece were arrived at much earlier than 2020, as this is a piece I had been mulling over for at least a decade beforehand). I've put PDFs of more or less salient material into the folder.

The piece consists of a matrix structure of 8 x 8 lines and columns (below). The matrix lines are not used entirely linearly, but instead appear in this 'labyrinth', where the sections have been intercut to gradually morph from predominantly A material to predominantly H.

Labyrinth

	1	A1					
	2	A2					
	3	C1	A3				
	4	A4	C2	D1			
	5	D2	A5	E1	C3		
	6	E2	F1	D3	C4	A6	
	7	H1	E3	A7	C5	F2	D4
	7	F3	C6	E4	H2	A8	D5
	6		H3	E5	C7	F4	D6
	5		E6	F5	D7	H4	C8
	4			D8	E7	F6	H5
	3				F7	H6	E8
	2					H7	F8
	1						H8

Note that the B and G materials are separated and assembled into a different skein, referred to as the 'U' material (can't remember what the 'U' symbolises). Those sections are 'dropped-in' to the structural order as inserts, and don't appear in the labyrinth.

The matrix looks like this:

Σ126	Cardinal							
A	12	21a	13	11	14	15	21b	19
B	21a	14	21b	19	11	12	15	13
C	13	21b	14	12	15	19	11	21a
D	11	19	12	21b	13	14	21a	15
E	14	11	15	13	19	21a	12	21b
F	15	12	19	14	21a	21b	13	11
G	21b	15	11	21a	12	13	19	14
H	19	13	21a	15	21b	11	14	12

	Ordinal							
A	2	7	3	1	4	5	8	6
B	7	4	8	6	1	2	5	3
C	3	8	4	2	5	6	1	7
D	1	6	2	8	3	4	7	5
E	4	1	5	3	6	7	2	8
F	5	2	6	4	7	8	3	1
G	8	5	1	7	2	3	6	4
H	6	3	7	5	8	1	4	2

	Gestural							
A	B	G	C	A	D	E	H	F
B	G	D	H	F	A	B	E	C
C	C	H	D	B	E	F	A	G
D	A	F	B	H	C	D	G	E
E	D	A	E	C	F	G	B	H
F	E	B	F	D	G	H	C	A
G	H	E	A	G	B	C	F	D
H	F	C	G	E	H	A	D	B

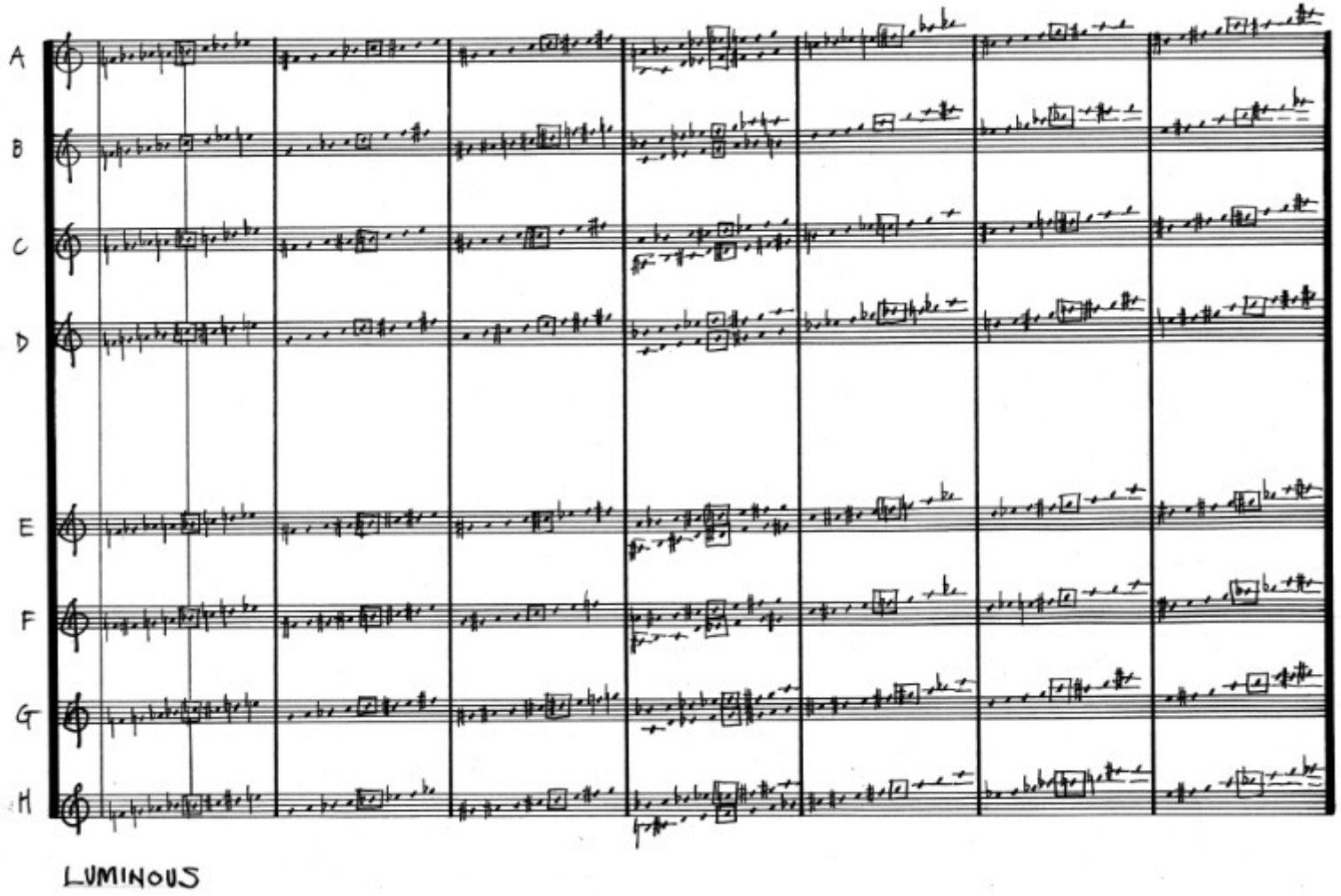
	Intervallic (11)—7 pitches							
A	1	2	1	2	1	1	2	2
B	2	1	2	2	2	1	1	1
C	1	2	1	1	1	2	2	2
D	2	2	1	2	1	1	2	1
E	1	2	1	1	2	2	1	2
F	1	1	2	1	2	2	1	2
G	2	1	2	2	1	1	2	1
H	2	1	2	1	2	2	1	1

Sliders								
11	12	13	14	15	19	21	21	Σ
11	12	13	14	15	19	21	21	126
10	11	12	13	14	18	20	20	118
10	11	12	13	14	17	19	19	115
9	10	11	12	13	16	18	18	107
9	10	11	11	12	15	17	17	102
8	9	10	11	11	14	16	16	95
8	9	9	10	11	14	15	15	91
7	8	9	9	10	13	14	14	84
7	7	8	9	9	12	13	13	78
6	7	7	8	9	11	12	12	72
6	6	7	7	8	10	11	11	66
5	6	6	7	7	9	10	10	60
5	5	6	6	6	8	9	9	54
4	5	5	5	6	7	8	8	48
4	4	4	5	5	6	7	7	42
3	3	4	4	4	5	6	6	35
3	3	3	3	4	5	5	5	31
2	2	2	3	3	4	4	4	24
2	2	2	2	2	3	3	3	19
1	1	1	1	1	2	2	2	11
1	1	1	1	1	1	1	1	8

What this shows is the word **l**(12)**u**(21)**m**(13)**i**(11)**n**(14)**o**(15)**u**(21)**s**(19) parsed into several forms:

- **Cardinal**: this matrix shows the values of the ur-word luminous permutated according to the ordinal matrix
- **Ordinal**: this matrix takes the values of the ur-word and numbers them from bottom to top (so 11 becomes 1, 12 becomes 2, 13 becomes 3, etc). Then it orders the columns exactly the same way as the rows so it reads in both directions.

- **Gestural**: this is the Ordinal matrix replaced by letters, and is used for distributing instrumental colour and the like (sadly, I can't remember what use I made of it in **luminous**).
- **Intervallic**: this crushes the ur-word values into '12' so that the 'contour' of the values is retained in a pitch scale. This is slightly complicated in **luminous** in that it is an 8-letter word, but I really only wanted 7 pitches so I amalgamated the central pair to be a single interval. It also introduced a minor third in some lines, where the 8x8 version consists only of an alternation of tones and semitones. The resulting harmony from the matrix looks like this (you can see the fifth pitch clearly annexed, and the two transpositions appear in the same column, giving several options):



The sliders are very important in **luminous**, more so than in most of my pieces (although in my latest, 10^{62}, they also function significantly). What they do is expand and contract the basic ur-word values to provide a varying degree of rhythmic smoothness, So in the bottom line of the sliders the values are compressed into a uniform '1', giving a total of *smooth* 8. The line that totals to (or **Σ**) 60, for instance, in the which the '21's have been compressed to '10's, would work as *ragged* quintuplets in a 12/4 bar. It means, again, that the contour of the rhythm is conserved but not the detail. This is the single most important feature in my music: **conservation of contour** rather than detail.

The cardinal matrix next gives the subsectional structure. It is one of my basic premises that structure and rhythm are the same process operating on different scales. That is, **structure is just slow rhythm.** So, taking the cardinal values (12, 21,...) and according each unit a basic value of 3" (the **Σ** of the cardinals is 126, which gives, with 3" increments, 378" or 6.3 minutes as a basic duration for the torso of the piece) we get 36"—63"—39"—33"—42"—45"—63"—57". I then fitted the matrix values into each of these durations without otherwise adjusting them, and found a metronomic tempo that accomodated this process. I also identified general, broad-brush, sonic principles that would operate in each subsection (and which the labyrinth would shuffle):

Σ126	Duration	Tempo ♩	cm	1	2	3	4	5	6	7	8	
A	36"	52	.9/3.6	12 16 C2	21a 16 H5	13 16 D7	11 16 B6	14 16 E3	15 16 F1	21b 16 A8	19 16 G4	Martellato single pitches ›
B	63"	60	1.5/3	21a 8 A5	14 8 F6	21b 8 B3	19 8 H2	11 8 C7	12 8 D4	15 8 G1	13 8 E8	Florid—harmonic wash
C	39"	48	.95/3.8	13 16 F2	21b 16 C3	14 16 G5	12 16 E4	15 16 H6	19 16 A1	11 16 D8	21a 16 B7	Melodic gestures—see grid for tessiturae
D	33"	58	.8/3.2	11 16 E2	19 16 B5	12 16 F8	21b 16 D6	13 16 G3	14 16 H4	21a 16 C1	15 16 A7	Material crushed into front of bars → long decay
E	42"	46	1.0/4	14 16 A2	11 16 F3 1 7	15 16 B8 3 5	13 16 H7 5 3	19 16 C4 6 2	21a 16 D1 4 4	12 16 G6 2 6	21b 16 E5	four-note chords x 2/sustained see grid for tessiturae

F	45”	40	1.1/4.4	15 16	12 16	19 16	14 16	21a 16	21b 16	13 16	11 16	four-note chords x 2/pulsed see grid for tessiturae
				C5	H8	D2	B1	E6	F4	A3	G7	
					1 7	3 5	5 3	6 2	4 4	2 6		
G	63”	60	1.5/3	21b 8	15 8	11 8	21a 8	12 8	13 8	19 8	14 8	Melodic gestures—see grid for tessiturae
				G2	D5	H3	F7	A6	B4	E1	C8	
H	57”	66	1.4/2.8	19 8	13 8	21a 8	15 8	21b 8	11 8	14 8	12 8	Four note chords x 2
				F5	C6	G8	E7	H1	A4	D3	B2	
		12 pages x 4 systems x 8” = 384” (6’24”) ~ Σ126 x 3”										

As you can see, I have separated out the B and G material for separate use, so the piece jumps from A to C, and F to H, as is shown in the labyrinth at the top.

Now it is possible to look at the actual structure of the piece and see how it all fits together:

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Affiliation	A1	A2	C1	A3	A4	C2	D1	D2	A5	E1	C3	U1.1 B1	E2	F1	U1.2 B2	D3
Duration	12 16	21a 16	13 16	13 16	11 16	21b 16	11 16	19 16	14 16	14 16	14 16	21a 8	11 16	15 16	14 8	12 16
Harmony	C2	H5	F2	D7	B6	C3	E2	B5	E3	A2	G5	A5	F3	C5	F6	F8
Tempo ♩	52		48	52		48	58		52	46	48	60	46	40	60	58

Section	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Affiliation	C4	U1.3 B3	A6	H1	U2 G1	E3	A7	U3 B4-5	C5	F2	D4	F3	C6	U4 G2-3	Sections E & F (E2 onwards) are mixed Ⓗ and Ⓢ
Duration	12 16	21b 8	15 16	19 8	21b 8	15 16	21b 16	19 8 | 11 8	15 16	12 16	21b 16	19 16	19 16	15 8 | 11 8	
Harmony	E4	B3	F1	F5	G2	B8	A8	H2 | C7	H6	H8	D6	D2	A1	D5 | H3	
Tempo ♩	48	60	52	66	60	46	52	60	48	40	58	40	48	60	

Section	31	32	33	34	35	36	37	38	39		40	41	42	43	44			
Affiliation	E4	H2	A8	D5	H3	E5	C7	F4	U5 B6-7		D6	E6	F5	D7	U6 G4-5			
Duration	13 16	13 8	19 16	13 16	21a 8	19 16	11 16	14 16	12 8	15 8	14 16	21a 16	21a 16	21a 16	21a 8	12 8		
Harmony	H7	C6	G4	G3	G8	C4	D8	B1	D4	G1	H4	D1	E6	C1	F7	A6		
Tempo ♩	46	66	52	58	66	46	48	40	60		58	46	40	58	60			
Section	45	46	47	48	49	50	51	52	53		54	55	56	57	58		59	60
Affiliation	H4	U7 B8	C8	D8	E7	U8.1 G6	F6	U8.2 G7	H5		F7	U8.3 G8	H6	E8	H7		F8	H8
Duration	15 8	13 8	21a 16	15 16	12 16	13 8	21b 16	19 8	21b 8		13 16	14 8	11 8	21b 16	14 8		11 16	12 8
Harmony	E7	E8	B7	A7	G6	B4	F4	E1	H1		A3	C8	A4	E5	D3		G7	B2
Tempo ♩	66	60	48	58	46	60	40	60	66		40	60	66	46	66		40	66

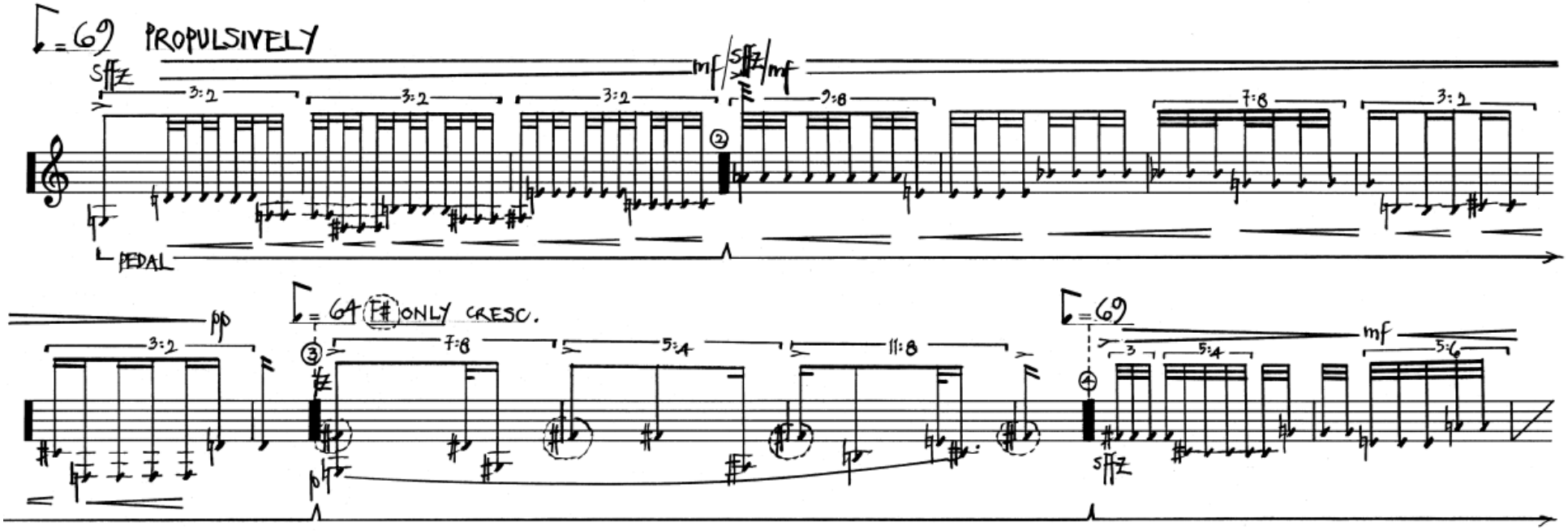
This gives us all the detail down to the bar unit. Rhythm is done by subdividing the bars similarly to the larger structures, but utilising the sliders to add drama to the musical lines. This is done rather like this (I'm not going to try and accurately reproduce how I did this as it would take too long):

Σ126	Cardinal								Slider line Σ	Becomes:								
A	12	21a	13	11	14	15	21b	19	8	1	1	1	1	1	1	1	1	
B	21a	14	21b	19	11	12	15	13	11	2	1	2	2	1	1	1	1	
C	13	21b	14	12	15	19	11	21a	19	2	3	2	2	2	3	2	3	
D	11	19	12	21b	13	14	21a	15	24	2	4	2	4	2	3	4	3	
E	14	11	15	13	19	21a	12	21b	31	3	3	4	3	5	5	3	5	
F	15	12	19	14	21a	21b	13	11	35	4	3	5	4	6	6	4	3	
G	21b	15	11	21a	12	13	19	14	42	7	5	4	7	4	4	6	5	
H	19	13	21a	15	21b	11	14	12	48	7	5	8	6	8	4	5	5	

So, looking at the first few bars of luminous, we see in bar 1 a **Σ** of 35, meaning a sequence of

12–21–13–11–14–15–21–19 rendered as **3(4)–6–4–3–4–4–6–5** attacks

with the first group accreted into a single attack. This first note is in fact a '4', as this bar is a 12/16, which divides into 36, not 35, so a spare triplet 32nd needed to go in, and the first pitch was the obvious place.



The second bar (we know from above it is A2, 21/16) slightly bends this process by superimposing a warping of the basic 'grain' between 6 and 9 per beat, but within that warp we see the second matrix line operating:

21–14–21–19–11–12–15–13 which becomes **7–5–7–6–4–4–5–4**

Just to complicate matters, however, this one is done not in 'grains' but in ***duration in seconds***, so the attack numbers become

8–5–7–5–3–3–4–2

This is an essential point of how I work: I do all the initial composition ***in time-space***, and only superimpose the metrical resolution afterwards, so most of the numerology is actually operating in proper-time rather than notation-time. If you apply a ruler to the score (which is written strictly as 3 cm = 1 second) you can probably see this more clearly.

That's probably enough to give you a handle on how **luminous** came together. I thought it would save time when we came to talk about it. I usually apply these processes rather more thoroughgoingly (I can't remember how *tight* I made **dark integers**, but it was done similarly); **luminous** has a flamboyantly improvisatorial feel, I think—hopefully, anyway. Hope all this is illuminating...