

# Organum on Westminster Abbey

Octophonic Microtonal Computer Music for Fixed Media

## Score for Analysis

Numeric values represent detuning in cents, and carry through the measure as accidentals.

$\text{♩} = 40$   $\text{♩} = 70$

2 *8va*

Drone Patch 01  
Morse Code

Lead Patch 01

-14

Detailed description: This system shows two staves. The top staff is in treble clef with a 4/4 time signature and a tempo of 40. It contains a 'Drone Patch 01 Morse Code' consisting of a series of notes with various accidentals. The bottom staff is in bass clef with a 4/4 time signature and a tempo of 70. It contains a 'Lead Patch 01' with notes and accidentals. A dashed line labeled '(8va)' is above the top staff. Detuning values are written above the notes: +15, -43, -3, +37, -3, -43, +28, -17, +28, -3, +37, -24, +14, -49, -12.

*(8va)*

Detailed description: This system continues the two staves from the first system. The top staff has a tempo of 40 and the bottom staff has a tempo of 70. The top staff is marked with '(8va)'. Detuning values are: +24, -41, -7, +26, -41, +24, -12, -49, -3, -43, -3, +37, -3, -43, +28, -17, +37, -10, +41, -9, +39.

3 *(8va)*

Detailed description: This system continues the two staves. The top staff has a tempo of 40 and the bottom staff has a tempo of 70. The top staff is marked with '(8va)'. Detuning values are: -14, +39, -9, +41, -10, -9, -41, +31, +3, -26, +3, +31, +41, +37, -17, +28, -28, +15, -43.

*(8va)*

Single Tone  
+2 Drone Patch 02

Detailed description: This system continues the two staves. The top staff has a tempo of 40 and the bottom staff has a tempo of 70. The top staff is marked with '(8va)'. Detuning values are: -8, -8, -8, -12, -43, -12, -43, -8, -12, -43, -12, -8, -43, -8, -12, -12, -12.

*loco*

3

Detailed description: This system continues the two staves. The top staff has a tempo of 40 and the bottom staff has a tempo of 70. The top staff is marked with 'loco'. Detuning values are: +6, -47, -1, -43, +7, -45, +2, -25, +47, +19, -10, -39, +31, +1, -29, +40, +8, -25.

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8<sup>va</sup>

+42 +9 -25 +40 +4 -33 +30 -8 -47 +13 -27 +31 -12 +31 -12 +44 -1 +44 -8 -8 -8 -12 -43 -12 -43 -8 -12

(8<sup>va</sup>)

5

Lead Patch 03  
*loco*

-14 Drone Patch 03

-43 -12 -8 -12 -12 -28 +15 -43 -3 +37 -3 -43 +28 -17 +28 -3 +37 -24 +14 -49

6

+24 -41 -7 +26 -41 +24 -12 -49 -3 -43 -28 +15 -43 -3 +37 -3 -43 +28 -17 +37 -10 +41 -9 +39

-14 +41 -9 -41 +31 +3 -26 +3 +31 +41 +37 -17 +28 -28 +15 -43

7

Single Tone  
Drone Patch 04

-12 -10 -14 -45 -12 -10 -14 -45 -12 -10 -14 -45 ±0 -12 -10 -14 -10 -14 -45 -12 -10 -14 -45

Lead Patch 04

±0 +4 -49 -14 +40 -49 -31 -47 -49 -47 -47

3 3 5 3

8

-49 -47 -49 -47 -49 -47 +22 +37 -46 -9

3

Drone Patch 05

9

+22 -9 +20 -47 +22 +37 -9 +20

-49 -43 -45

10

(8va) -43 -45 -10 -25 +1 +8

Drone Patch 06

+4

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8<sup>va</sup> -8 -6 -41

11 (8<sup>va</sup>) -8 -6 -41

Lead Patch 07

Drone Patch 07

-8 +39 -15 +30 -26 +17 -1 +39 -22 +16 -47 -10 +26 -39

-12

12 (8<sup>va</sup>) -5 +28 -39 -10 -47 -1 -41 -43 -12 -10 -43 -12 -8 -10

Drone Patch 08

+2

13 (8<sup>va</sup>)

Lead Patch 08

+6 -1 +44 -12 +42 +4 -47 +6 -47 +4 -29 -10 +47 +2 +42 -29 +2 +6

(8<sup>va</sup>) +2 +42 -1 -27 -12 +4 -47 -29 -27 -10 -10 +7

(8va)

14

+6 +42 +2 +7 -1 +6 -27 +4 -1 -29 -12 -47 -47

Drone Patch 09

±0

Lead Patch 09

15<sup>ma</sup>

-27 -14 -41 -31 -35 -27 -49 +6 +38 -29 +2 +7 -12 -27 -1 +6 +17 -49 +38 +45 +38 -41 -45 -3 -12 +40 +17 -10 -27

(8va)

±0 -27 -49 +6 +4 -29 +28 -31 +5 +29 +40 -14

-14 -49 +4 +40 +2 -12 -31 ±0

±0 +2

(15<sup>ma</sup>)

+42 -35 -27 +28 +29 +29 +2 +45 +38 -49 +4 -47 +5 -3 -45 15 +38 -31 +11 -27 -10 -27 -1 +42 -49 -41 ±0 +17 -29 -14 +7

(8va)

-12 -27 +2 +6 -31 +6 +29 -3 +45 +4

-12 +40 +2 -12 ±0 -14 -49

±0

(15<sup>ma</sup>) -

+4 +29 -41 +38 -1 +11 +28 -35 -47 +42 -45 +38 +40 +5 +7 +17 -35 +29 +38 -1 +29

(8<sup>va</sup>) -

+40 +28 -12 -27 +2 -14 +45 ±0

-31 -31 -12 +2 +4 -14

+2

(15<sup>ma</sup>) -

16 +4 -27 -10 +6

(8<sup>va</sup>) -

-10 +6 -27 +6 -27 +4 -10

+6 -27 -10 +4 -27 -10

+6 +4 +4

+6

Drone Patch 06

*loco* Lead Patch 06

-25 +1 +8 +1

8<sup>va</sup> -

-41 -41 -8 -8 -10 -8 -10 -41

17 -10 -10 -8 -41 -41 -10 -8 -41

-10 -41 -10 -41

Drone Patch 10

-14

Lead Patch 10

15<sup>ma</sup>

Musical notation for Lead Patch 10, measures 15-17. The system includes a treble staff, a bass staff, and an 8va section. Fingerings are indicated by numbers 1-5 and accidentals. Measure numbers 15, 16, and 17 are shown above the treble staff. The 8va section is indicated by a dashed line and the label '8va'.

(15<sup>ma</sup>)

Musical notation for Lead Patch 10, measures 18-19. The system includes a treble staff, a bass staff, and an 8va section. Measure numbers 18 and 19 are shown above the treble staff. The 8va section is indicated by a dashed line and the label '(8va)'. Measure 19 is also marked with '18' above the treble staff.

loco

Musical notation for Lead Patch 10, measures 20-21. The system includes a treble staff and a bass staff. Measure numbers 20 and 21 are shown above the treble staff. The section is marked 'loco'.

19

Musical notation for Lead Patch 10, measures 22-23. The system includes a treble staff and a bass staff. Measure numbers 22 and 23 are shown above the treble staff. The section is marked '19'. The bass staff includes a section labeled 'Drone Patch 04' with a finger number of ±0.

Lead Patch 04

±0 +4 -49 -14 +40 -49 -31

8<sup>va</sup>

-12 -12 -10

-12 -10 -12

(8<sup>va</sup>)

20

-12 -10 -12 -10

Lead Patch 07

-8 +39 -15+30 -26 +17 -1+39 -22 +16 -47-10+26 -39

-12 -10

-12 Drone Patch 07

(8<sup>va</sup>)

-5+28 -39 -10-47 -1-41

21

-6 -39 -8

-6 -39 -8

-6 -39 -8

8<sup>vb</sup>

±0

Drone Patch 11

Lead Patch 11

+3+48 *sim.*

22

+35 -23+17 -43 -23 -8 +48 +3+43 +10-39 +11 -41



8va - - - - -

+6 -21 -49 +23 -6 -35 +35 +5 -25 +44 12 -21 +46 +13 -21 +44 +8

-8 +6 -25 +8 -8 +6 -25 +8 -8

3

-8 +6 -25 +8 -8 +6 -25 +8 -8

23

8va - - - - -

Lead Patch 12

Detuning from prev. meas. 3

Accumulating sustained attacks

-45 +2 +47 -10 +7 -43 +6 -47 +31 -29 +8 +42 -1 +44 -12 +31

+6 +2

3

Drone Patch 12

(8va) - - - - -

-25 +4 +30 -47 -27 +13 -47 -8 -27 -12 -1 +6 +30 -33 +4 +40

+7 +2 -10 -29 +42 +4 -47 -12 +8 +40 -29 +1

24

8va - - - - -

Cluster contours on release

+31 -39 -10 +19 +47 -25 +2 +19 -10 -39 +1 -29

+6 +2 -29 +4 -12 +2 +6 +2

8va-

25

+40 +8 -25 +42 -12 -47 +4 +42 +9 -25 +40 +4 -29 -10 +2 +7

-33 +30 -8 -47 +6 -1 -12 -27 +13 -27 +31 -12 -47 +30 +4 -25

8vb

(8va)

+44 -1 -47 +6 +42 +8 -29 +31 -43 +7 -45 +2 -10 +47

-43 -12 -8 -10

26

-43 -12 -8 -10

-12

Drone Patch 13

(8vb)

Lead Patch 13

-12 +41 -7 +43 -8 +39 -15 -7 +33 -24 +17 -43 -6 +28 +43 -26 -41 +30 -7

27

+16 -22 +39 -1 -41 -26 -15 -7 +41 -12 +33 -24 +17 -43

3

8va-

Lead -8

Patch -6

06 -41

(8va)

28

-8 -6 -41 -10 -25 +1 +8

8va-

+4

Drone Patch 06

(8<sup>va</sup>)  
-8  
-6  
-41

29

Lead Patch 14  
-12 +41 -7 +43 -8 +39 -15 -7 +33 -24 +17 -43 -6 +28 +43

Drone Patch 14  
-12

30

-26 -41 +30 -7 +16 -22 +39 -1 -41 -26 -15 -7 +41 -12 +33 -24 +17 -43

3

Lead Patch 07  
-43 -12 -10

31

Lead Patch 15  
-47 -8 -47 +13 -47 -8 +30 -33 +4 -33 +4 +40 +4 +40 -25 +9 +42 +9 -25 +40 +4

Drone Patch 15  
+2

Lead Patch 08  
8<sup>va</sup>

+2 +42 -1 -12 -27 -12 +4 +42 -29 -47 -29 -27 +6 +2 -10 -10 -47 +7

(8<sup>va</sup>)-----

32

Drone Patch 09  
±0

Lead Patch 09

15<sup>ma</sup>-----

8<sup>va</sup>-----

33

(15<sup>ma</sup>)-----

(8<sup>va</sup>)-----

(15<sup>ma</sup>) -41 -1 +11 +28 -35 -47 +42 -45 +38 +40 +5 +7 +17 -35 +29 +38 -1 +29

+4 +29 +38 -1 +11 +28 -35 -47 +42 -45 +38 +40 +5 +7 +17 -35 +29 +38 -1 +29

(8<sup>va</sup>) +40 +28 -12 -27 +2 -14 +45 ±0

-31 -31 -12 +2 +4 -14

+2

(15<sup>ma</sup>) 34 +4 -27 -10 +6

+6 -10 +6 -27 +6 -27 +4 -10

(8<sup>va</sup>) -10 +6 -27 +6 -27 +4 -10

-27 -10 +6 +4 -27 -10

+6 +6 +4 -10 -10

+6 +4

Drone Patch 06

loco Lead Patch 06 -25 +1 +8 +1

8<sup>va</sup> -41 -41 #8 -8 -8 -10 #8 #10 -10 -41 35 #10 -10 -8 #8 -41 -41 -10 -8 -41

-10 -41 -10 -41 -10 -8 -41

-14

Drone Patch 03

Lead Patch 03

*loco*

36

37

Lead Patch 04

Single Tone  
Drone Patch 04

38

Drone Patch 05

Lead Patch 05

+22 # +37-46 -9 +22 -9 +20

39

-47 +22 +37 -9 +20 -49

40

8va 3 3 3 8va 3

-14 +24 -14 +37 -14 +37 # -14 +24 +24 +37 +24 +37 +24 +24 -14 # -14 -14 +37 +37 +24 +37 +24

-14

Drone Patch 16

Lead Patch 16

-14 +39 -9 +41 +37 -10 -9 +41 -17 -9 +41 +28 -17 -28 +28 -17

41

8va

-41 -41 # -8 -8 -10 # -8 -10 -41 -10 -41 -10 -8 -41 -41 -10 -8 -41

+4

Drone Patch 17

Lead Patch 17

8va -

-41 +9 +8 +46 +4 +1 -45 -43 +46 -41 +8 +4 -45 +9 +1 +15 +8 +9 -43 -31 -6 -10 -45 +46 -41 +33 -45 +32 -25

(8va) -

+15 +6 +10 -45 +11 -6 +42 -25 -23 -10 -23 +42 +44 -31 +32 +33 42 +42 -23 -23 -27 -37 +49 +21 +10 +11 +44 +33 -23 +42 -8 +6 +3

Lead Patch 10

-10 -10 -10 -10

Drone Patch 10

-14

43

-10 -10 -10 -10

Drone Patch 04

+0

Lead Patch 04

+0 +4 -49 -14 +40 -49 -31 -12 -12 -10 -10

3 3 5 3

-12 -10 -12



8va

44

Lead Patch 07

-12 -10 -12 -10

-8 +39 -15+30 -26 +17 -1+39 -22 +16 -47-10+26 -39

-12 Drone Patch 07

(8va)

-5 +28 -39 -10 -47 -1 -41 +5 +39 -6 -12 +28 -13 +26 -15 -39 -43 -5 -10 +33 -24 -8 -26

45

Lead Patch 14

+41 -39 -22 +17 +47 -47 +17 +16 +39 -1 +30 +43 -7 +26 -39 -41 -12 +41 -7 +43 -8 +39 -15 -7 +33 -24 +17 -43 -6 +28 +43

-14 Drone Patch 14

46

-26 -41 +30 27 46 +16 -22 +39 -1 -41 -26 -15 -7 +41 -12 +33 -24 +17 -43

Lead Patch 07

47

Lead Patch 18

-6 -39 -8 -6 -39 -8 -6 -39 -8 +34 +11 +10 -8 -43 +6 +1 +3 -23

8vb

+6 Drone Patch 18

Measures 1-47. Treble staff notes: +35, -49, -21, -25, +12, +46, -6, +8, -43, -8, +3, +35, +34, +6, +10, -25, -23, +11. Bass staff: drone accompaniment.

Measures 48-95. Treble staff notes: +10, +11, +3, -8, +6, +46, +34, +12, -49, -23, -43, +8, -25, -21, +35, -6, +34, +46, +8, +11, +35, -23, -6, +12, -21, +10, -49, -43, -8, +6, +3, -25. Bass staff: drone accompaniment.

Measures 96-143. Treble staff notes: -21, +12, +46, +8, -25, -49, +35, -6, -43, +10, -8, +6, +34, +3, +11, -25, -23. Bass staff: drone accompaniment.

Measures 144-191. Treble staff notes: +34, -8, +46, +3, +6, -25, -21, +11, +35, +12, -23, +10, -49, -6, -43, +8, +6, +11, -23, -8, -25, +34, +3, +10, -43. Bass staff: drone accompaniment. *8va* marking above staff.

Measures 192-239. Treble staff notes: +35, -21, -49, +12, -6, -25, +46, +8, -6, -39, -8, -6, -39, -8. Bass staff: drone accompaniment. *(8va)* marking above staff.

50

Lead Patch 19 *8va* *15<sup>ma</sup>*

Drone Patch 19

Detailed description: This system shows measures 50 and 51. The top staff (treble clef) contains the lead melody with fingerings (e.g., -6, -39, -8) and articulation marks (accents, asterisks). The bottom staff (bass clef) contains the drone accompaniment. A '9' is written below the bass staff in measure 50. The system is labeled 'Lead Patch 19' and 'Drone Patch 19'. The patch names '8va' and '15<sup>ma</sup>' are placed above the treble staff.

Detailed description: This system shows measures 52 and 53. The top staff (treble clef) contains the lead melody with fingerings (e.g., -22, -39) and articulation marks. The bottom staff (bass clef) contains the drone accompaniment. The system is labeled 'Lead Patch 19' and 'Drone Patch 19'. The patch name '8va' is placed above the treble staff.

51

Detailed description: This system shows measures 54 and 55. The top staff (treble clef) contains the lead melody with fingerings (e.g., -8, -6, -8, -22, -39, -6, -39, -22, -22, -8, -6, +32, -20, -4, -4, -20, +43, -39) and articulation marks. The bottom staff (bass clef) contains the drone accompaniment. The system is labeled 'Lead Patch 19' and 'Drone Patch 19'. The patch name '8va' is placed above the treble staff.

Detailed description: This system shows measures 56 and 57. The top staff (treble clef) contains the lead melody with fingerings (e.g., +37, -35, -11, +20, -6, +32, -3, +21, -4, -2, -39, -37, -20, -8) and articulation marks. The bottom staff (bass clef) contains the drone accompaniment. The system is labeled 'Lead Patch 19' and 'Drone Patch 19'. The patch name '8va' is placed above the treble staff.

52

Lead Patch 20

Drone Patch 20

Detailed description: This system shows measures 58 and 59. The top staff (treble clef) contains the lead melody with fingerings (e.g., -3, +21, -8, -35, +43, -11, +20, +37, -2, -20, -39, -22, +32, -4, -6, -37) and articulation marks. The bottom staff (bass clef) contains the drone accompaniment. The system is labeled 'Lead Patch 20' and 'Drone Patch 20'. The patch name '15<sup>ma</sup>' is placed above the treble staff.

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8va - - - - - , 15ma - - - - -

+45 +30 +21 +21 +30 -22 -39 -11 +37 -35 +9 +34 +47 -4 +32 -43

8va -6 -6 -6 -6 -8 -8 -8 -8

53

8va -6 -6 -6 -6 -8 -8 -8 -8

15ma - - - - -

Lead Patch 19 8va +6 +6 +6 +6 +4 +4 +4 +4

Drone Patch 19 +4 -8 +4 +4

8va -10 -10 -10 -10 -27 -27 -27 -27

8va -10 -10 -10 -10 -27 -27 -27 -27

54

8va +6 -27 -27 -10 -10 -10 -10 +4 +6 +4 +4 +8 +8 +8 +8 -45 -45 -27

8va - - - - -

+49 -23 +1 +32 +6 +9 +33 +8 +10 -27 -25 -8 +4

+10 +33 -45 -10 -8 +32 +6 +1 +44 -23 +9 -27 +49 -25

55 *15<sup>ma</sup>*-----  
 +9 +33 +4 -23 -45 +1 +32 +49 +10 -8 -27 -10 +44 +8 +6 -25  
 Lead Patch 06  
 +4  
 Drone Patch 06

*8va*-----  
 56  
 Lead Patch 14  
 -8 -6 -41  
 Drone Patch 14  
 -12

57  
 +17 -43 -6 +28 +43 -26 -41 +30 -7 +16 -22 +39 -1 -41 -26 -15 -7 +41 -12 +33 -24 +17 -43  
 3

58 *15<sup>ma</sup>*-----  
 -7 +17 -12 -39 +39 -15 +16 +33 -6 -24 -39 -26 +28 -8 -10 -41  
 -6 +17 +39 -8 -26 -24 -12 +16 -10 -15 +28 -39 -7 -43 +33 -41  
 -12  
 Drone Patch 07

Lead Patch 07  
 -8 +39 -15 +30 -26 +17 -1 +39 -22 +16 -47 -10 +26 -39  
 +5 +28 -39 -47 -10 -47 -1 -41

*8va*-----  
 Lead Patch 04  
 -12 -12 -10 -10  
 59  
 -12 -10 -12 -10  
 ±0  
 Drone Patch 09

Lead Patch 09

15<sup>ma</sup>-

-27 -14 -41 -31 -35 -27 -49 +6 +38 -29 +2 +7 -12 -27 -1 +6 +17 -49 +38 +45 +38 -41 -45 -3 -12 +40 +17 -10 -27

8<sup>va</sup>-

±0 -27 -49 +6 +4 -29 +28 -31 +5 +29 +40 -14

-14 -49 +4 +2 +40 +2 -12 -31 ±0

±0 -14 +2

(15<sup>ma</sup>)-

+42 -35 -27 +28 +29 +2 +45 +38 -49 +4 -47 +5 -3 -45 60 +38 -31 +11 -27 -10 -27 -1 +42 -49 -41 ±0 +17 -29 -14 +7

(8<sup>va</sup>)-

-12 -27 +2 +6 -31 +6 +29 -3 +45 +4

-12 +40 +2 -12 ±0 -14 -49

±0

(15<sup>ma</sup>)-

+4 +29 -41 +38 -1 +11 +28 -35 -47 +42 -45 +38 +40 +5 +7 +17 -35 +29 +38 -1 +29

(8<sup>va</sup>)-

+40 +28 -12 -27 +2 -14 +45 ±0

-31 -31 -12 +2 +4 -14

+2 ±0

Musical notation for measures 61 and 62. Measure 61 is marked with a *15<sup>ma</sup>* dynamic. The notation includes a treble clef staff with notes and a bass clef staff with a drone patch. Fingerings are indicated by numbers 1-5. Measure 62 continues the melody with a *±0* dynamic and is labeled "Drone Patch 04".

Musical notation for measures 62 and 63. Measure 62 is labeled "Lead Patch 04" and includes a triplet of eighth notes. Measure 63 is labeled "Morse Code" and features a long note with a slur. Fingerings and dynamics like *±0* and *+6* are shown.

Musical notation for measures 63 and 64. Measure 63 is labeled "Lead Patch 11" and includes the instruction *sim.* (sustained). Measure 64 continues the melody. Fingerings and dynamics like *+3+48* and *+6* are shown.

Musical notation for measures 64 and 65. The notation includes a treble clef staff with notes and a bass clef staff with a drone patch. Fingerings and dynamics like *+6* and *-25* are shown.

Musical notation for measures 65 and 66. Measure 65 is marked with an *8<sup>va</sup>* dynamic. Measure 66 is labeled "Lead Patch 21". The notation includes a treble clef staff with notes and a bass clef staff with a drone patch. Fingerings and dynamics like *+6* and *+11* are shown.

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Lead Patch 07

65

Drone Patch 13

Lead Patch 13

8<sup>va</sup> Lead Patch 04

66

8<sup>va</sup> Drone Patch 04

67

15<sup>ma</sup> Lead Patch 19

68

Drone Patch 09



Lead Patch 09

15<sup>ma</sup>

8<sup>va</sup>

(15<sup>ma</sup>)

(8<sup>va</sup>)

(15<sup>ma</sup>)

(8<sup>va</sup>)

Lead Patch 04

Drone Patch 07

Lead Patch 07

Drone Patch 01 - Morse Code

Lead Patch 22

72

The first system of music consists of two staves. The upper staff is in treble clef and contains a complex melodic line with many beamed notes. Below the notes are several numerical figures: ±0, +4, -45, -27, +45, +17, -12, +17, +45, +4, +42, -14, +29, -14. The lower staff is in bass clef and contains a few notes, including a double bar line.

The second system of music consists of two staves. The upper staff is in treble clef and shows a long note with a slur extending across the bar line. The lower staff is in bass clef and shows a single note. Above the first measure, there is a tempo marking: ♩ = 40. Below the second measure, the text "Morse Code" is written. At the bottom of the lower staff, there is a numerical figure: ±0.