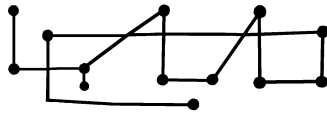


*UN(-)* RAVELLED,  
OR  
THE HIDDEN DRAGON



JOHN RAHN

A five mile long  
dragon  
moves through  
a winding course,  
all its parts,  
organically connected,  
following its head  
around each corner at  
inconceivably remote  
distances, but always,  
unimaginably,  
inexorably, performing

the precise maneuver  
 predestined over a  
 humanly  
 unencompassable  
 space, from head to  
 inconceivably distant  
 tail.

Time stretches  
 transcendently,  
 beyond any  
 measurable  
 flow,  
 by the  
 overwhelming  
 magnitude  
 of each  
 dragon-move  
 event.

Benjamin Boretz, “a Korean court music” from “(*whose time what space*)”

THE FIRST THING to notice is the orchestral sound, sensuous, lush, and Russian—the nose (the noise) is of Shostakovitch with whiffs of Stravinsky.<sup>1</sup> It’s a serious sound too, dramatic and austere even in its richness. The initial *klang* is a B $\flat$ /E $\flat$  dyad presented as a bell, with brass and piano and percussion dropping out after three beats while strings continue the sound for another six beats (see Example 1).

Both this perfect fourth, that is, the five-semitone pc interval, and the bell-stroke sound immediately become thematic. There are three bells to start things off. The second bell, at measure 4 (9 beats after the first), adds winds to the strike envelope and lasts for eight 3-beat bars (this is written in  $\frac{3}{2}$  meter). During this span, a bongo (with mallets) presents an almost-symmetrical speed-up/slow-down rhythm.<sup>2</sup> The third bell is at Letter A, measure 12, and after the initial strike, we hear over it the melodic strand that will run through the remainder of the piece. This melodic strand shares the perfect-fourth pc-interval-type with the B $\flat$ /E $\flat$  bell *klang*: the piece reveals itself as sustained B $\flat$ /E $\flat$  bell-*klang* perfect fourths under a melodic strand almost entirely itself in parallel perfect fourths. The harmonic character might correlate with what Ben calls a “humanly unencompassable space” (or time) in the quote above; the melodic character, to the dragon in its sinuosity—though both contribute to both.

$\text{♩} = 42$

Flute I/II  
*f*  $\rightarrow$  *p* *f*  $\rightarrow$  *p*

Horn I/II  
*mf*  $\rightarrow$  *pp* *mf*  $\rightarrow$  *pp*

Trumpet I/II  
*mf*  $\rightarrow$  *pp* *mf*  $\rightarrow$  *pp*

Bongo [medium-high]  
*ff* *medium mallets*

Vibraphone  
*f* *hard mallets, with pedal, motor off*

Piano  
*f* *ff*

Violin I  
*mf* *mf sempre*

Violin I  
*mf* *mf sempre*

Violin II  
*mf* *mf sempre*

Violin II  
*mf* *mf sempre*

Violas  
*mf* *mf sempre*

Violoncellos  
*mf* *mf sempre*

Double bass  
*mf* *mf sempre*

*simile*

EXAMPLE 1

But let us recur to the introductory two *klänge*, measures 1–11. The rhythm of the bells is short–long, a slightly anticipated 3 + 9 (3 × 3) or an elongated 3 + 6. In either construal, the effect lends impetus to the third, longest *klang*, which is set up as the final one of these initial three bells, in the immemorial 3-gesture.<sup>3</sup> The first bell leaves us in limbo—there is no other content during it—but the bongo rhythm during the second *klang* sets up a pattern of increasingly rich content that is fulfilled by the third B $\flat$ /E $\flat$  *klang*, which goes on, in a way, for the rest of the piece—there is a continuous bell-presented B $\flat$ /E $\flat$  pedal through bar 93, returning in bars 119–23 (out of 135 bars total). This beginning is like warming up a tam-tam for the final stroke at Letter A.

The sound of these slow bell-fourths (with bongo) is ritualistic and “Far-Eastern”; it could be court music from some imaginary ancient Japan or Korea. In fact, adding an authorial note, the booklet for *UN(-)* in the Open Space CD contains two texts by Ben, both of which refer to Korean court music. One of them is reproduced here as the initial quote to this article.<sup>4</sup>

Ben also refers to parallel organum (the parallel fourths). The continuous pedal presence of the bell-presented B $\flat$ /E $\flat$  provides, in addition to a particular sonorous ground (as in figure/ground, or even the underlay of the painting) in a sensuous sense, a stable pitch-class reference point for the entire piece. Is this bell-presentation, representation? (It is certainly re-presentation with all its insistent repeats.) Is this a strange kind of semiotics in which the B $\flat$ /E $\flat$  ground is both referred to by the melodic figuration and physically, explicitly present? Or should we take seriously the image of the dragon in immense space-time, working this into the analysis—is this a founding or essential metaphor, or perhaps a meaning referred to by the music?

I’d say, no to both. The dragon/space image is only a colorful image, not part of this music; and the ground and figuration of *UN(-)* are on the same side of Saussure’s sheet of paper, or rather, on neither side and not on that paper at all. Ben says, “Neither *UN(-)* nor its title are metaphors for each other or anything.”<sup>5</sup> Nuts to Saussure. Rather than squirreling away these musical events, wrapping them in Saussure’s famous paper, I would let the events stand proud, all of them, as themselves, all of them modifying and coloring each other non-dualistically and non-hierarchically (in a categorical sense).

(On the other hand, this analysis, any analysis, is an image, a judgment, a commentary; a metaphor . . . but as for the music:)

The ground and the figuration *work* on each other in the “unconcealedness” of their being.<sup>6</sup> This idea of “work” derives from Hegel. The following quote (from the famous passage on the “master–slave

dialectic”) illustrates the relation between work and being. You would have to imagine the ground as determinate not-figuration, and figuration as determinate not-ground, both musical characters or personae constituted in and as part of our consciousness; but not on a stage—the dialectic plays into the ontology of the whole (piece of music), in the world.

Desire has reserved to itself the pure negating of the object and thereby unalloyed feeling of self. This satisfaction, however, just for that reason is itself only a state of evanescence, for it lacks objectivity or subsistence. Labour, on the other hand, is desire restrained and checked, evanescence delayed and postponed; in other words, labour shapes and fashions the thing. The negative relation to the object passes into the form of the object, into something that is permanent and remains; because it is just for the labourer that the object has independence. This negative mediating agency, this activity giving shape and form, is at the same time the individual existence, the pure self-existence of that consciousness, which now in the work it does is externalized and passes into the condition of permanence. The consciousness that toils and serves accordingly attains by this means the direct apprehension of that independent being as its self.<sup>7</sup>

It is easy to hear them working. Clearly, there is a ground/chord character (or person) and a figuration/melody character. For both of these, separately and together, there are two underlying syntactical pitch-class orders heard with and against each other at all times, a linear chromatic order and a perfect fourth order, though the perfect-fourth order predominates in the chord character. Each order is naturally a “circle-of-fourths” transform of the other: in pc notation—multiply each integer by five (see Example 2). You can think of these also as spaces for the music to happen in.

<0 1 2 3 4 5 6 7 8 9 10 11>  
<0 5 10 3 8 1 6 11 4 9 2 7>

EXAMPLE 2: TWO SYNTAX ORDERS

What is structured by these two syntaxes or spaces are successions—presented in time or in pitch or in constructed syntactical subspaces—of pitch classes or, overwhelmingly, of perfect fourths. Perfect fourths are

presented in orders derived from a succession of perfect fourths (pc interval 5s), and (simultaneously) in orders derived from a succession of interval 1s. This is all clearly heard in the music—it is obvious. But the analysis, not being in music, tends to obscure it. The analysis has to double-think in two syntactical dimensions.

We can represent the pitch-class structure of the piece in either space.<sup>8</sup> The chromatic syntax is so aurally familiar to musicians that perhaps we need only present the other one, the order by fourths. This pitch-class structure chart shines high in Example 3. The elements are pc-fourth-dyads that are ordered by fourths, with dyad 0 representing the ubiquitous B $\flat$ /E $\flat$ , dyad 1 representing E $\flat$ /A $\flat$ , and so on, so that numerically successive integers represent fourth-successive pc-fourth dyads: the *names* of the fourth-dyads are the *order numbers* in the perfect-fourth syntactical order. The usual TTOs—here, only transposition—then apply in the usual way. (We can employ this technique for any ordering of elements, so that the names of the elements of the syntactic order are the order numbers of those elements. For the chromatic order of single elements only, the order numbers equal the numbers that are the elements of the order.)<sup>9</sup>

Names: 0 1 2 3 4 5 6 7 8 9 10 11

Dyads: B $\flat$  E $\flat$  A $\flat$  C $\sharp$  F $\sharp$  B E A D G C F  
 E $\flat$  A $\flat$  C $\sharp$  F $\sharp$  B E A D G C F B $\flat$

### EXAMPLE 3: FOURTH-DYADS IN FOURTH-ORDER WITH NAMES

Here follow some observations on the resulting syntax of combinations of fourth-ordered fourths and their relation to chromatic-ordered fourths.

- I. Fourth-order adjacent dyads have one pc in common (e.g., 0 = B $\flat$ /E $\flat$ , 1 = E $\flat$ /A $\flat$ ). Transformationally, this means transposition by fourths-order-T<sub>1</sub> or T<sub>11</sub> results in a dyad with one pc in common with the dyad-argument. This is a *smooth* relation.
- II. Fourths-order-T<sub>5</sub> and T<sub>7</sub> result in a dyad chromatic-T<sub>1/11</sub>-related to the argument: fourths-T<sub>7</sub> of B $\flat$ /E $\flat$  is A/D, which is chromatic-T<sub>11</sub> of B $\flat$ /E $\flat$ .

- III.  $T_6$  results in a dyad chromatic- $T_6$  away whose pc are individually  $T_1$  and  $T_{11}$  from the pc in the argument dyad:  $T_6$  of  $B\flat/E\flat$  is  $E/A$  (one goes up and the other goes down a semitone).
- IV. So  $T_{5,6,7}$  all result in an audibly *crunchy* harmonic relation in which *both* pcs are chromatic-semitone related to the pcs of the argument dyad
- V.  $T_{4,8}$  produce a *semi-crunch*:  $T_4$  of  $B\flat/E\flat$  is  $F\sharp/B$ , one chromatic semitone pc relation.
- VI. There are step relations at  $T_{2,10}$  (chromatic  $T_{10,2}$ ) and  $T_{5,7}$  (chromatic  $T_{1,11}$ ). This is a *linear* relation.
- VII.  $T_{0,3,6,9}$  are identical to chromatic- $T_{0,3,6,9}$ .
- VIII. The union of  $T_n$  and  $T_{n+2}$  contains  $T_{n+1}$  (chain-filling):  $\cup((T_2(B\flat/E\flat), T_4(B\flat/E\flat))) = \cup(A\flat/C\sharp, F\sharp/B) = \{A\flat, C\sharp, F\sharp, B\}$  which contains  $C\sharp/F\sharp = T_3(B\flat/E\flat)$ —so step relations of dyads produce chains, marrying the chromatic-linear and the fourths-linear.

All of these are predicted from the circle-of-fourths isomorphism operating between the chromatic order and the fourths order, as shown in Example 2; e.g.,  $T_1$  and  $T_5$  are circle-of-fourths images of each other, as are  $T_6$  and  $T_{10}$ ,  $T_4$  and  $T_8$ ,  $T_3$  and  $T_7$  and so on. As a result, since an isomorphism is a bijection, you can swap domains in the above comments, so that the group of operations acts on the obverse order, and also, independently, swap  $T_n$  qualifiers; e.g., “I. *chromatic*- $T_5$  and  $T_7$  result in a dyad *fourths*- $T_{1,11}$ -related to the argument: *chromatic*  $T_7$  of  $B\flat/E\flat$  is  $F/B\flat$ , which is *fourths*- $T_{11}$  of  $B\flat/E\flat$ ”—applied either to a domain of fourth-dyads or a domain of chromatic-dyads (e.g., chromatic- $T_5(D/E\flat) = G/A\flat =$  fourths- $T_1(D/E\flat)$ ). In both the chromatic and fourth-order frame, as you slide fourths back and forth against the static  $B\flat/E\flat$  origin, there is an inversionally symmetrical structure to the resulting combinations as set-class types—mostly tetrachords, with two trichords nearest the origin ( $\{B\flat, E\flat, A\flat\}$ ,  $\{F, B\flat, E\flat\}$ ). It is possible to inventory the resulting five chord types, but perhaps more audible is the qualitative characterization given above, the smoothness and crunchiness and linearity.

This fourths/secods conceptual shimmer is a permanent rabbit-duck built in to the system—not only for  $UN(-)$ , but for tonal music also, in which semitones and fifths play complementary musical roles. This rabbit-duck lurks in any 12-element system, depending only on the well-known set of co-primes to 12. But it is intensively farmed in  $UN(-)$ .

Our approach to UN(-) then relies on the rabbit-duck shimmer as its component syntactical orders (and the relations between them) are *filtered through* yet another order, the presentational order in time, which can be thought of as *a chromatic temporal order*. Other presentational orders are possible. In *Meta-Variations*, Boretz called a syntax filtered through a presentational order a *musical structure*.<sup>10</sup>

\* \* \*

Now let us look at the chart in Example 4, showing the pc-fourth-dyad-class numbers structured throughout the entire piece. The 0 shown in the pedal voice refers to the B $\flat$ /E $\flat$  dyad in its bell-presentations. This is not just a pc dyad, but a particular pitch frame within which all the harmonic action and counterpoint through Letter E take place—B $\flat$  top of bass clef, E $\flat$  above treble clef. (See Example 1.) The space within the frame is variously colored by its changing internal pitch spacings and pc content as the piece unfolds.

At Letter A, the pedal voice is joined by another voice, labeled voice A, which presents the linear melisma that is the character that contrasts with the harmonic bell strand. After Letter B's harmonic gathering of bells at bar 53, at bar 60, voice A is joined by a second melodic voice, labeled voice B (pedal still going), and at bar 69, the third melodic voice enters, labeled voice C. All melodic voices are structured similarly, individually, but their combination is quite complex and difficult to hear.<sup>11</sup> Voice C lasts from bar 60 to bar 75, then drops out, so bars 60–75 are the most intensely melodic part of the piece. In the melodic strands, the pc content represented by the dyad numbers in Example 4 is realized in pitch with maximal pitch (chromatic-order) linearity, so that pc lines are heard as pitch lines by normal proximity.

We have seen a constant, gradual build-up of musical intensity, complexity, and loudness. At Letter C (bar 75), all melodic voices drop out until bar 82, and there is another bell tintinnabulation, similar to that at Letter B but louder, and very explicitly with two simultaneous bell strands in different ring patterns, one presenting B $\flat$ /E $\flat$  and the other presenting dyads 6, 7 and 8 against the 0 (see Example 5).

There was a hint of this expanded bell content at Letter B, where dyad 9 (G/C) lingered in the clarinet and oboe against the B $\flat$ /E $\flat$  in strings, brass, and other winds. But at Letter C, the total harmonic content of the combined bells is a composite harmony, labeled  $\alpha$ : dyads {0, 6, 7, 8}, pcs {G A B $\flat$  D E $\flat$  E}. This can be broken down into two fourth chains, <B $\flat$  E $\flat$ > and <E A D G>. As predicted by our observations on the syntax above, this is a “crunchy” sound, containing three chromatically related



|         |          |           |          |                       |          |       |          |          |      |          |          |        |      |          |           |    |               |          |  |
|---------|----------|-----------|----------|-----------------------|----------|-------|----------|----------|------|----------|----------|--------|------|----------|-----------|----|---------------|----------|--|
|         |          | <b>A</b>  |          |                       |          |       |          |          |      |          |          |        |      |          |           |    |               |          |  |
| m.      | 0        | 12        | 14       | 16-7                  | 18       | 19    | 23       | 24       | 25-6 | 28       | 29       | 32     | 33-4 | 36       | 38        | 38 | 39-42         | 43       |  |
| voice A | <u>0</u> | 11        | <u>4</u> | 11                    | <u>5</u> | 6     | 11       | 4        | 10   | 1        | 1        | 6      | 3    | (3)      | <u>10</u> | 1  | <u>9</u>      |          |  |
| Pedal   | <u>0</u> |           |          |                       |          |       |          |          |      |          |          |        |      |          |           |    |               |          |  |
|         |          | <b>B</b>  |          |                       |          |       |          |          |      |          |          |        |      |          |           |    |               |          |  |
|         | 45       | 52        | 53       | 57                    | 58       | 59-60 | 61       | 62-3     | 68   | 69       | 70       | 71     |      |          |           |    |               |          |  |
| A       | 1        | (8)       | 6        | 2                     | 7        | 2     | <u>2</u> | 1        | 11   | 4        | 11       | 3      | 4    | 11       | 6         | —  | (4 11 1.3 10) | Ob/Cl    |  |
| C       |          |           |          |                       |          |       |          |          |      |          |          |        |      |          |           |    |               | Tpt./Bsn |  |
| B       |          |           |          |                       |          |       |          |          |      |          |          |        |      |          |           |    |               | 5        |  |
| Pedal   |          |           |          | 9                     | 11       | 4     | 2        | <u>2</u> | 9    | 2        | <u>2</u> | (9)    | 2    | <u>2</u> | Fl/Hn     |    |               | 4        |  |
|         |          |           |          | 0/9 pedal → 0 pedal → |          |       |          |          |      |          |          |        |      |          |           |    |               |          |  |
|         |          | <b>C</b>  |          |                       |          |       |          |          |      |          |          |        |      |          |           |    |               |          |  |
|         | 71       | 72        | 73       | 74                    | 75       | 76    | 79       | 80       | 81   |          |          |        |      |          |           |    |               |          |  |
| Ob/Cl   | 11       | —         | (1 6 11) | 9                     | 7        | 2     | 1        | (6 11)   | 9    | (6 1)    | 3        | 8      | 4    | —        | —         | —  | —             | —        |  |
| Tpt/Bsn |          | 6         | 8        | —                     | —        | —     | —        | —        | —    | (10 3 5) | 2        | 8      | 0    | —        | —         | —  | —             | —        |  |
| Fl/Hn   | 1        | 3         | 4        | —                     | —        | —     | —        | —        | —    | —        | —        | 6 (+7) | 2    | —        | —         | —  | —             | —        |  |
| Pedal   | —        | (0 pedal) | →        |                       |          |       |          |          |      |          |          | 0      | —    | —        | —         | —  | —             | —        |  |

EXAMPLE 4: FOURTH-DYAD STRUCTURE

**D** 83 Piano 2+4 (0 1 2 3 4) end voices A, B

82 mm (6 1 8) (4 1 1 6) 0 pedal

84 winds (0 1 2 3 4) 0

85 winds 0 3 2 4 (0 1 2 3 4)  $\beta$

86 strings  $\beta$  (= m. 85)

87½ winds winds  $\beta$  (= m. 85)

**E** 90 0 being linear fourth strands

90-2 8 6 1 1 4 9 7 5 10 8 1 6 1

(intervals: 2 5 7 5 2 2 5 2 7 5 5) 0 pedal

93 1 6 0 10 no pedal

94 1 6 0 10 no pedal

95 1 6 4 7[rest]10

96 4 2 6 4 (6 8 10) 8

97 2 6 10 0

98 4 10 0

99 2

EXAMPLE 4 CONT.

|   |                 |     |               |              |              |              |       |          |             |           |       |                         |             |
|---|-----------------|-----|---------------|--------------|--------------|--------------|-------|----------|-------------|-----------|-------|-------------------------|-------------|
|   | 100             | 101 | 102           | 103          | 104          | 105          | 106   | 107      | 108         | 109       | 110   | 111                     |             |
|   | <u>10</u> (6) 0 | — 9 | <u>11</u> — 9 | — 7          | <u>5</u> — 0 | 1 0 5 —      | 7     | <u>6</u> | 2           | 7 6 5 —   | 2 4 — | 7                       |             |
|   | <u>5</u>        | — 3 | <u>1</u> —    | [rest]       | <u>11</u> —  | 10 —         | (0) — | 10 —     | 10 —        | 3 (0) 2 — | 4 —   | —                       |             |
|   |                 |     |               | ┌ BACH ┐     |              |              |       |          |             |           |       |                         |             |
| <span style="border: 1px solid black; padding: 0 2px;">F</span> | 111             | 112 | 113           | 114          | 115          | 116          | 117   | 118      | 119         | 120       | 121   | 122                     | 123         |
|   | 2 — 0           | 4 6 | 0 2           | <u>7</u> — 1 | <u>7</u> — 1 | <u>7</u> — 1 | 7 1   | 7        | 1           | 7         |       |                         |             |
|   | 6               | 8   | 10            | 0 2          | <u>9</u> 8   | <u>9</u> 8   | 9 8   | 9 8      | 9           | 8         | 9     | 2 9 4 (6)               | <u>11</u> — |
|   |                 |     |               |              |              |              |       |          | 3rd voice 0 | 0         | low   | <i>ff</i> Piano / Vibes | Vln. B      |
|   |                 |     |               |              |              |              |       |          | Ob/Cl       | Bsn / Hn  |       |                         |             |
|   |                 |     |               |              |              |              |       |          | pedal       |           |       |                         |             |
|   |                 |     |               |              |              |              |       |          | re-entry    |           |       |                         |             |

EXAMPLE 4 CONT.

**C**

75

Fl. *ff*

Ob. *ff*

Cl. *ff*

Bsn. *a 2*  
*ff*

Hn. *a 2*  
*sfz f*

Tpt. *a 2*  
*sfz f*

Vib. *ff*

Pno. *ff*

Vln I *f*

Vln II *f*

Vla. *f*

Vc. *f*

Db. *f*

EXAMPLE 5: LETTER C

pc pairs. Letter C sounds like the harmonic climax of the piece, focusing on harmony the way bars 60–75 focused on melody.

But it isn't, or at least, it is only the beginning of the climax. The harmonic intensity is raised to a new level in bar 79, where one concerted bell stroke presents dyads {0 2 4} (see Example 6).

As observed above (observation VIII), this implicitly contains dyads {0 1 2 3 4}, a complete segment of the fourths-order which contains pcs {B $\flat$  E $\flat$  A $\flat$  C $\sharp$  F $\sharp$  B}—the diatonic hexachord. This harmony becomes referential; it is labeled  $\beta$ . In relation to harmony  $\alpha$  (bar 75): dyad 0 remains, dyads 6, 7 and 8 are chromatically transposed down one semitone ({E A D G} to {E $\flat$  A $\flat$  D $\flat$  G $\flat$ }).

Harmony  $\beta$  is broken down into two bell strands, with dyad 0 and dyads {1 2 3 4}, in bars 80–2, and voices A and B re-enter briefly in bar 82. They present dyads <6 1 8> over <4 11 6>, condensing harmonically to dyads {4 6 8}, which extends the fourths chain that constitutes the concurrent  $\beta$  harmony (dyads {0 2 4})—in pcs, this combined harmony is {B $\flat$  E $\flat$  A $\flat$  C $\sharp$  F $\sharp$  B E A D G}, a fourths-chain of ten pcs.

Letter D follows at bar 83, *subito sfz* and *ff*, presenting the  $\beta$  harmony in a bell stroke, differently arranged in register than before (see Example 7). The  $\beta$  harmony is presented again as a bell stroke in bars 85, 86, and 87. This, finally, is clearly the harmonic climax of the piece, in the span between Letter C and Letter E.

The bongos re-enter in bar 84 with a speed-up/slow-down rhythm that recalls the previous bongos in bars 4–10. The bongos make clear that this is a re-presentation of the beginning, retroactively heard at Letter C and re-iterated at Letter D. The harmonic climax coincides with a recapitulation.

Letter E, bar 89, corresponds to Letter A, bar 12, as melodic voices enter the texture again (as they did at Letter A, and here, after dropping out at Letter C, except for their brief, harmonically motivating appearance in bar 82 described above). Again, as always so far, each melodic voice is in parallel fourths. Though its general similarity is apparent, Letter E differs from Letter A in several respects. Unlike Letter A, there are no bell strokes—for the first time in the piece! The last bell stroke was in bar 87; it rings on in attenuated B $\flat$ /E $\flat$  form through bar 93 but does not re-articulate, weakly, until Letter G, bar 119. The B $\flat$ /E $\flat$  dyad which has been a pedal since the beginning drops out at bar 94, as the B $\flat$ /E $\flat$  there is no longer bell-presented but forms the beginning of a second melodic strand (Letter A has only one strand). In fact, the B $\flat$ /E $\flat$  in the clarinet and flute at bar 94 are the pitch frame of the bell sounds for the entire piece so far—B $\flat$  below middle C, E $\flat$  above treble clef. So when they start to move melodically, it is as if the frame starts dancing, *à la Russe*. In

79

Fl.

Ob.

Cl. 1.

Bsn.

Hn.

Tpt.

Vib.

Pno.

Vln I

Vln II

Vla.

Vc.

Db.

Detailed description: This is a musical score for a single bar, bar 79. The score is arranged vertically for various instruments. At the top, the number '79' is written. The instruments listed from top to bottom are: Flute (Fl.), Oboe (Ob.), Clarinet (Cl.) with a first fingering (1.), Bassoon (Bsn.), Horn (Hn.), Trumpet (Tpt.), Vibraphone (Vib.), Piano (Pno.), Violin I (Vln I), Violin II (Vln II), Viola (Vla.), Violoncello (Vc.), and Double Bass (Db.). Each instrument part shows a single note with a fermata, indicating a sustained sound. The notes are: Flute (F#4), Oboe (F#4), Clarinet (Bb3), Bassoon (Bb3), Horn (F#4), Trumpet (Bb3), Vibraphone (Bb3), Piano (Bb3), Violin I (Bb3), Violin II (Bb3), Viola (Bb3), Violoncello (Bb3), and Double Bass (Bb3). The key signature has one sharp (F#) and the time signature is 4/4.

EXAMPLE 6: BAR 79

**D**

83 as before

Fl.

Ob.

Cl.

Bsn.

Hn.

Tpt.

Bongo

Pno

**D**

Vln I

Vln II

Vla

Vc.

Db.

subito *ff*

subito *ff*

subito *ff*

subito *ff*

*sfz*

*e*

*ff*

*f*

*f*

*f*

*f*

*f*

EXAMPLE 7:  $\beta$  HARMONY AT BARS 83-5

summary so far: just as Letter C to Letter E emphasized the harmonic character even to the exclusion of the melodic, so does Letter E to Letter G emphasize the melodic to the exclusion of the harmonic character.

From Letter E to Letter F, bars 90 to 111, there is nothing but two melodic strands, each in parallel fourths, except for a reappearance of the bongos in 93–7—not in the former rhythm, but in equally spaced 4-beat attacks until bar 97, which has a burst of fast attacks which decays to a slightly slower speed over about two beats. In spite of the sparser texture, bars 90–111 remain extremely intense. Bars 90–3 have a stepwise ascent, appearing in brass, then winds, from dyad 8 (D/G) to dyad 6 (E/A), all against the dying bell dyad 0 (E♭/B♭). This line is taken up by the strings in bar 93 (dyad 1, D♯/G♯) in what is probably UN(-)'s most Shostakovitchian moment (see Example 8), continuing into a very intense further line while the second melodic line appears in the winds, up out of the basic B♭/E♭ pitch frame to a B♭ above high E♭ in bar 104—the next step up in a <B♭ E♭> syntax presented in pitch, contributing to the overall intensity.

Letter F, bar 111, finally relaxes from the high tension created in the middle of the piece. The two parallel-fourth voices descend, decrescendo, to a gentle out-of-phase wavelike oscillation (see Example 9). The lower, string voice alternates dyads 7 and 1 (6 apart, A/D to E♭/A♭), while the upper wind voice alternates dyads 9 and 8 (G/C to D/G) so that each dyad of each voice sounds with each of the other voice. The harmonic total is dyads {7 8 9 1}, a fourths chain of four pcs from A to C plus E♭/A♭. It is a *fourths-order* T<sub>1</sub> of chord α, {6 7 8 0}! recall that chord β is related to α by sliding its chain of 3 fourths-dyads by *chromatic-order* T<sub>11</sub>/T<sub>1</sub>. This would be completed into a chain of eight pcs, from A to A♭ in fourths, by dyad 11, pcs {F B♭}.

At Letter G, bar 119, over the chord waves, a dyad 0 (B♭/E♭) appears in the oboe and clarinet, later in the horn and bassoon, in what turns out to be a reference to bell-presentation but without the oomph; and a new melodic line that appears in bar 121 terminates in a *ff* dyad 11 (F/B♭). This completes the chain referred to earlier, <A D G C F B♭ E♭ A♭>.

Finally, at Letter H (bar 124), there is a coda, ending the piece at bar 135. The transition to the coda is carefully worked out. The B natural in violins in bar 123 is the first melodic pitch not paired in fourths, signaling some big change in character. It is approached via a tune *in piano*/vibraphone bell sounds (in fourths), <C♯ C B A B♭ (B)>. In bar 124, both the harmonic and the melodic strands as we have come to know them drop out. The B natural from the violins is continued in pc permutation of its preceding context: <(B) A B♭ C C♯ . . . >. The explicit fourths remain absent, both harmonically and melodically! The solemn, ritualistic, dra-



matic overall character of the piece is subverted. The winds present two, then four, then five melodic lines in perky little rhythms (see Example 10).

The texture is quasi-fugal, but there is no fugal imitation, only some sequencing within lines. What does happen over the coda is that in spite of the individual lines rising over and over again, there is a composite chromatically falling line from the initial A 440 to a middle-of-bass-clef D

93

Fl. *f* strongly marked throughout

Ob. *f* strongly marked throughout

Cl. *f* strongly marked throughout

Bongo *ff* *fff*

Vln I *ff* sempre forceful, expressive, strong attacks throughout

Vln II *ff* sempre forceful, expressive, strong attacks throughout

Vla *ff* sempre forceful, expressive, strong attacks throughout

Vc. *ff* sempre

97

Fl.

Ob.

Cl.

Bongo *f*

Vln I

Vln II

Vla

Vc.

EXAMPLE 8: BARS 93–8

114

Fl.

Cl.

Bsn.

Hn.

Vln I

Vln II

Vla.

Vc.

Db.

*f* *diminuendo slowly and steadily* (*mf*) *mp*

*a 2*

*f* *diminuendo slowly and steadily* (*mf*) *mp*

*f* *p* *mp*

*f* *p*

*f* *p*

*f* *p*

*f* *p*

*f* *p*

EXAMPLE 9: THE WAVES

124

Picc.

Fl.

Ob.

*f* *mf sempre* *mf*

*f* *dim. poco* *mf sempre* *mp sempre*

*detached, bright*

$\text{♩} = 78$

EXAMPLE 10: BEGINNING OF CODA

in bar 133—a sort of wagon-wheel effect. The D then descends one more step to C $\sharp$ —under B $\flat$ /E $\flat$  finally (but not the familiar pitch frame)—before the piccolo and clarinet move upwards (in parallel minor thirds!) to a final A $\sharp$ /C $\sharp$  -- like a Renaissance gesture, twirls of the wrist spiralling upwards.<sup>12</sup> This is an ending that returns the piece to a human scale.

133

Picc. *mf sempre*

Fl. *mf sempre*

Ob. *mf sempre*

Cl. *dim. poco*

Bsn. *dim. poco*

ca. 10:00  
Barrytown, June-October 1999

EXAMPLE 11: END OF CODA

\* \* \*

This narrative has given us something of the overall shape and character of the piece, and how this is supported by its harmonic structure as the syntax plays out through presentational time. We need to say more about the melodic structure, especially after Letter A and from Letter E to Letter F, where the melodic development is particularly intense. We also have more to say about time. First, let's look at the rhythm of the bells, shown in Example 12.

In some cases, Example 12 approximates to show the simpler ratios, but often no approximation is necessary. Remember, the numbers represent  $\frac{3}{2}$  bars at  $\text{♩} = 42$ , so each bar lasts 4.29 seconds (more or less). The scale is *large*. Three bars last about 13 seconds; 10 bars last 43 seconds. Look at the initial line at Letter A in Example 4. A sequence of 10 5 5 4 11 bars is gathered into two 15s (10 + 5 and 4 + 11) separated by a 5 in a 3:1:3 pattern—but 15:5:15 bars is 64.35 : 21.45 : 64.35 seconds, a vast stretch of time over which to hear the relation. Some might argue that “people can't hear over that large a stretch of time.” This is nonsense, since I can and you can hear it—if not that the ratio is exactly 3:1, then a good sense of it qualitatively, just as we do with rhythms on a smaller scale. If the ratios were much different—closer to 2:1 than 3:1 here for example—the piece would sound quite perceptibly different. The value of observing these ratios does not lie in some numerological virtue, but in the musical feel underlying each ratio, feels which correlate in our experience with the feels of each ratio at coordinate locations in the piece, spinning a web across the larger structure.

## Beginning

1:3  
 3:8 (quasi  $3 \times 3$ )  
 9:24

## Letter A

3: 1: 3 (ratio of 15:9 beats = 5:3 with previous nine-beat unit)  
 2: 1  
 10 5 5 4 11

1:1: 2: 1:  $\frac{1}{3}$ : 3: 1: 1: 1:  $\frac{1}{2}$ : 1:  $\frac{1}{2}$ : 1 (more or less)  
 4 4 10 10 3 8 7 9 8 4 7 5 9

## Letter B

1:2: 1: 2: 1  
 6 12 13 25 13  
 6 67

## Letter C

2: 3  
 1: 3: 4  
 3: 8: 12 3:8 bars exactly as in beginning  
 2 1 2 6 12(3 + 3 + 3 + 3)  
 12 9 second line of bells here too  
 4: 3

## Letter D

1:1  
 17(9 + 8)  
 3 3 7 19  
 second line starting bell, bongo, bell . . .

## EXAMPLE 12: BELL-INTERVALS, IN BEATS, WITH SEQUENTIAL RATIOS

The piece depends on such large-scale patterns in time as its temporal ground. Recall from the initial quote:

Time  
 stretches  
 transcendently,  
 beyond any  
 measurable

flow,  
by the  
overwhelming  
magnitude  
of each  
dragon-move  
event.

3:1 is the initial and most characteristic ratio. Note the 3:5 ratio at Letter A; this relation is more difficult to hear as such, but the music's bell-pattern temporal space definitely expands at this point. Before Letter B we have a wandering pattern in non-exact simple ratios, like the sinuous coil of the dragon. Letter B expands the unit again into 6 and 12 bars, with pretty exact ratios. Letter C has 1:3:4 (2:3) in one line of bells against 4:3 in another simultaneous strand of bells, over very large stretches of time, 8, 9, 12 bars long. The bell-presentations tail off between Letter D and Letter E, as noted above.

\* \* \*

Example 13 shows the melody (in oboe and clarinet) from Letter A to Letter B, with another line, in the flute, representing the  $B\flat/E\flat$  bell strand. We can notice immediately that the rhythm of the bell strand has something to do with the rhythm of the melody, so that its description in its own terms, the ratios above, is incomplete.

Bars 12–26: The melody typically ascends or descends stepwise to a held note which is, in bars 12–26, either four or three beats long. In every case during this span, the bell enters two beats after the long note in the melody. The effect is that of a gong whose delayed entrance emphasizes the agogic stress of the melodic long note. The implied—heard—combined meter is either  $\frac{4}{2}$  or  $\frac{5}{2}$  rather than the notated  $\frac{3}{2}$ . The long notes themselves form chromatic stepwise ascents and descents, with preambles and tails that recur—the long notes in 12–26 are (referring only to the top pitches of the parallel fourths):  $\langle B\flat B B\flat A$  (false descent to  $G\flat$ -dotted-half surprises us by moving back up to)  $A B\flat B \rangle$ ; this part of the tune condenses to  $\langle B B\flat A B\flat B \rangle$ , over a long time, 13 bars, that is, 64 seconds. The initial motive— $\langle F\sharp$ -short  $G\sharp$ -short  $A$ -short  $B\flat$ -long $\rangle$ —is shortened to  $\langle A\flat B\flat B$ -long $\rangle$ , shortened further to  $\langle A B\flat$ -long $\rangle$ ; then heard as initially, but descending to the initial pitch  $\langle B B\flat A\flat G\flat$ -long $\rangle$ , which is bounced off of in exactly the original rhythm  $\langle F F\sharp G\sharp A$ -long $\rangle$  to the initial long  $A$ , and so on. Note how the harmonies play into all this, as shown in Example 4. The first, pick-up

Fl. *mf* *p* not legato but almost undetached and essentially even, like a choral chant *mf* *p* *mf* *p*

Ob. *mf* *p* *mf* *p* *mf*

Cl. not legato but almost undetached and essentially even, like a choral chant *f* *f* *f*

Fl. *mf* *p* *mf* *p* *mf*

Ob. *mf* *p* *mf* *p* *mf*

Cl. *f* *f* *f*

Fl. *mf* *p* *mf* *p* *mf* *p*

Ob. *mf* *p* *mf* *p* *mf* *p*

Cl. *f* *f* *f*

Fl. *mf* *p* *mf* *p* *mf* *p*

Ob. *mf* *p* *mf* *p* *mf* *p*

Cl. *f* *f* *f*

EXAMPLE 13: LETTER A TO LETTER B, REDUCTION

long note is  $F/B\flat$ , forming a smooth fourth-chain of 3 pcs with the bell  $B\flat/E\flat$ ; the second is  $F\sharp/B$ , a semi-crunch initiating the down-up figure; the third is the smooth  $F/B\flat$  again; the fourth and lowest long note of this extended figure is  $E/A$ , a crunch; and then it winds back up, bouncing off the crunch.

EXAMPLE 13 CONT

Bars 27–31 condense to  $\langle B\flat A A\flat G\flat \rangle$ . This is initially presented in half notes with an interpolated  $A\flat$  as  $\langle B\flat A\flat A A\flat G\flat \rangle$ , recurved up in a  $\langle 1\ 2\ 3 + 2 \rangle$  quarter-note rhythm as  $\langle F G\flat A\flat \rangle$  (also a reference to bar 22), with a bell entering on the 2 of the  $3 + 2$ , 3 beats rather than 4 beats after the long melodic note. This then descends to a pick-up half-note  $G\flat$ , followed by an emphatic statement in dotted-half-notes  $\langle A A\flat G\flat \rangle$  ending in bar 31.

Bars 32–40 at first seem to re-affirm the terminal  $F\sharp$  of the previous line. Initially, there is an ascent from E to  $G\sharp$ , then to A, then a decisive descent  $\langle B\flat A G F\sharp \rangle$ , followed by a re-affirmation  $\langle A G F\sharp \rangle$ . But this last motive turns out to be part of another one,  $\langle A$ -pickup  $G$ -dotted-half,  $F\sharp$ -dotted-half,  $F$ -dotted-quarter $\rangle$ . But this also turns right around and ascends  $\langle F$ -overlapped  $G A\flat$ -dotted-half $\rangle$ . Perhaps we can hear this as the  $\langle B\flat A A\flat G\flat \rangle$  from the previous section with a partial retrograde ascent  $\langle B\flat A A\flat G\flat (F\sharp) A\flat \rangle$ .

In bar 41 this turns into a repetition of the  $\langle E F G A\flat \rangle$  from bar 32. So far then, from bar 12, the condensed tune would be  $\langle \langle B\flat B\flat A B\flat B \rangle \langle B\flat A A\flat G\flat (F\sharp) A\flat \rangle \rangle$ , which could be heard as extending the

descent to A one step further, to  $A\flat$ . I am not sure “condensation” works at this level any more, but it would be  $\langle B\flat A \dots A\flat \rangle$ .

Bar 42 returns to the last ascent to  $A\flat$  but twists it into a further ascent all the way to C, in triplet half notes:  $\langle E F G A G\sharp A, B, C \rangle$  (on the CD, the oboe mistakenly plays  $\langle E, F, G, A\flat, G\sharp, A, B, C \rangle$ ), ending in bars 43–4. This G/C lasts nine quarter notes, longer than the usual long notes (they have been getting shorter since bar 12, also). The G/C is the goal, or at least the end, of the entire motion from Letter A to Letter B; it returns and persists in bars 52–9. G/C is  $T_9$  of  $B\flat/E\flat$  in both fourths-order and chromatic-order, mysteriously ambiguous. Between its initial appearance in bar 43 and its closing one in bar 52 we return to descending figures ending on the familiar  $G\sharp$  and then G, then A, followed by a surprise ascent to A/D approached by the initial motive from bar 13–5, transposed to  $\langle B\flat$ -quarter C-half  $D\flat$ -dotted-half D-dotted-half  $\rangle$ . This is repeated, then descends to the final C,  $\langle D$ -dotted-quarter  $C\sharp$ -dotted-quarter C-long  $\rangle$ . We could read this high C as the chromatic neighbor of the initial long-note B. If we do, the tune over bars 12–52 would be  $\langle B\flat A \dots A\flat \dots C \rangle$ . I am not sure this makes aural sense, however.

Of course, the tune continues, but that is all we will look at here. The melisma slowly winds up and down chromatically in versions of a four-note motive. Its overall motion is not terribly decisive or directional; it wanders and coils like a dragon. It is closely coordinated harmonically and rhythmically with the bell strand. In all this, the intensity builds to a remarkable level, which is sustained until the relaxing waves after Letter F.

\* \* \*

Example 14 shows the two melodic strands from Letter E to Letter F. This is the melodic climax of the piece. Initially, there is a stepwise ascent in the brass from G to G an octave higher, with curls, under the  $B\flat/E\flat$  dying bell in the winds. The  $B\flat/E\flat$  and D/G form a semicrunch. The ascent pauses at stages of a fourths chain: D/G, G/C, C/F. The sequence would be exact if the third module had not recurved back down to  $D\sharp/G\sharp$  from E/A. (The next module would have begun with  $F/B\flat$ , which does not appear until bar 101.) The final  $G\sharp$  (abbreviating for its  $D\sharp/G\sharp$  dyad) is taken over by the strings in bar 93 as the incipit of their intense, Shostakovitchian line here, under an  $E\flat$  in the winds which is now a second melodic strand rather than a bell.

Bars 93–9: The winds slowly wander around  $E\flat$  and  $C\sharp$ :  $\langle E\flat F E\flat C\sharp E\flat C\sharp \rangle$ . The strings, using the familiar motives, ascend from  $G\sharp$  to  $C\sharp$ , one step in the fourths chain ( $D\sharp/G\sharp$  to  $G\sharp/C\sharp$ ), then down to D/G



93

Fl. *f strongly marked throughout*

Cl. *f strongly marked throughout*

Vln I *ff sempre*  
*forceful, expressive, strong attacks throughout*

Vln II *ff sempre*  
*forceful, expressive, strong attacks throughout*

Vla *ff sempre*  
*forceful, expressive, strong attacks throughout*

Vc. *ff sempre*  
*forceful, expressive, strong attacks throughout*

*ff sempre*

99

Fl. (1.)

Cl. (1.)

Vln I 3:2

Vln II 3:2

Vla 3:2

Vc. 3:2

EXAMPLE 14: LETTER E TO LETTER F

under the final G $\sharp$ /C $\sharp$  in the winds, a crunch that contributes to the intensity. Note that the final dyad in the winds was the highest and mid-point dyad in the strings, tying both strands together.

Bars 100–5: The D/G in bar 99 descends stepwise to C/F with a lower neighbor. The neighbor dyad, B/E, then enters the counterpoint in the second voice over the C/F, a crunch sustaining the intensity from the crunch in bar 99. The lower voice skips up a fifth—down one in the fourths-chain—to F/B $\flat$ , (long awaited from the sequence in 90–3), another crunch against the upper voice B/E. Both voices continue

## EXAMPLE 14 CONT

upwards by steps, the lower from F/B $\flat$  to B/E, and the upper from B/E to F/B $\flat$ —a dyadic voice exchange! Both voices then skip down a fourth, staggered, so that the E/A in the lower crunches (again) against the F/B $\flat$  in the upper before this moves to the C/F, also a crunch against B/E.

Bars 105–10: The lower voice takes up the move-by-skip idea—from 104 to 108, <D A G $\sharp$  D A E (C $\sharp$ ) B>. These giant steps prefigure the relaxing waves to follow, but still in tense mode. The upper voice descends stepwise from F to B, a descent to be continued beyond Letter F. Both voices end at Letter F with a crunchy {F $\sharp$ /B C/F}, presented in register as (going up) <C F $\sharp$  F B>, also illustrating the dual nature of T6 in fourth-syntax (points III and VII).

\* \* \*

This has been a detailed, picky analysis. It had better not show everything, and it doesn't. I suspect its level of detail may be excessive, as it is. It frequently employs a blow-by-blow in-time structural narrative. The prose and approach are conventional to a fault.

The reason for this is that Ben's thought and music tend to be both appreciated and dismissed for virtues of unconventionality, free spirit, originality, and Ben's apparent lack of respect for or patience with the kind of thought and music that follows norms, gets a haircut, wears a tie. So, here is a piece of music by Ben, described that way, the analysis wearing its grey suit. What appears? Exactly the same *kinds* of musical virtues analysis finds in Pérotin, Bach, Mozart, Beethoven, Schoenberg, Stravinsky, Shostakovich . . . though of course the music as a whole does not sound or feel anything like the music of any other composer than Ben.

*UN(-)* does a lot with a little. The simple elements (e.g., parallel fourths) are organized in complex ways (spaces, syntaxes) but presented with controlled simplicity. When an extra voice of bells or melody enters, it is an essential part of a building musical field. The most obvious surface elements of orchestration and loudness unabashedly serve the overall unified effect. The austerity of the material and its presentation contributes to the grandeur of the resulting whole.

## ALTERNATIVELY

## NINE IN FIRST PLACE

The *I Ching* has this to say about the first hexagram, Chi-ien, The Creative, with a moving line (9 in the yarrow-stalk oracle) in first place (bottom line of the hexagram):

*The Judgment*

The creative works sublime success,  
Furthering through perseverance.

*The Image*

The movement of heaven is full of power.  
Thus the superior man makes himself strong and untiring.

*The Lines*

Nine at the beginning means:  
Hidden dragon. Do not act.<sup>14</sup>

Nine at the beginning means: “Hidden dragon. Do not act.” What does this signify? The Master said: This means a person who has the character of a dragon but remains concealed. He does not change to suit the outside world; he makes no name for himself. He withdraws from the world, yet is not sad about it. He receives no recognition, yet is not sad about it. If lucky, he carries out his principles; if unlucky, he withdraws with them. Verily, he cannot be uprooted; he is a hidden dragon.<sup>13</sup>

## NOTES

1. Benjamin Boretz's *UN(-)* for orchestra has been beautifully recorded by the La Jolla Symphony under Harvey Sollberger, conductor. It appears in the CD *Open Space 19*. Ben Boretz does happen to be of Russian ancestry, but the kind of sound here is very unusual for his music.
2. It would have been symmetrical had it gone on with the last beat of measure 8 through measure 10 in a retrograde pattern. This would have taken a measure less than the score, which slows down more slowly at the end.
3. *Va va Voom*. Hi, hip, hurray. The beginning of the "Eroica" (also with  $B\flat/E\flat$ ).
4. The CD booklet for *Open Space CD 19* contains this poem-analysis by Dorota Czerner, shown here, along with the complete text of Ben's second note.

*"a friend came to our house with a gift of a mango fruit. . . ."*

*a bird caged inside the globe crushed pulp gave off a sweet*

*heart pounding against the soft fire like a yellow bird set free,  
skin cut, stone out*

*an opening inside opening not like something else an incision  
not like itself not like hearing not hearing like being pierced  
only always mine yours but other too*

*". . . the following evening he returned demanding my body  
and soul to pay off the debt . . ."*

*nobody can get past himself  
without listening to their own  
a place a dream, you think  
what you think before moving  
forward time perched on the  
sound, grammar years undone*

*". . . I am a green locust in charge of our ship an outlaw a fugi-  
tive, gliding from roof to roof, carrying messages and light . . ."*

*past himself un-noticed, dressed in language to go ashore, woven unraveled then put back in the shiny pod, to be called again only to save nomadic images traversed by rivers of memory, dotted with oases, a blue waterfall flowing up*

*and the music, emptying the reality of miracle, against the unwillingness, I can bear*

*four steps below myself*

*singing, "now by night my body turns into an insect, and we fly together on a vessel made from the bark of a mango tree"*

UN(-) arises at the convergence of two biographical vectors: a year of absorbing the sound and sensibility of a little band (Woodstock Chamber Orchestra) led by my longtime friend and Bard College colleague Luis Garcia-Renart; and the reverberations of two just previously composed pieces, one a discourse called *Music as Anti-Theater*, the other a 'multitext' (*Black/Noise III* for computer-processed sound, video images, vocalized words), whose convergence induced an energy for making radically un-discursive, un-metaphorical, un-referential music. Neither UN(-) nor its title are metaphors for each other or anything; but there are, looming somewhere within them, never explicitly referenced, the spectres of ancient Korean court orchestras and ancient French polyvocal church music.

5. See previous footnote.
6. Ben also refers, in his CD notes, to an essay of his about representation: "Music as Anti-Theater," in *Music Inside Out: Going Too Far in Musical Essays*, by John Rahn (G&B Arts International (Amsterdam), 2001, pp. 161–90). Of course "unconcealedness" is a Heideggerian term: see also in this issue Charles Stein, "Heidegger without Heidegger: The Musical Thinking of Benjamin Boretz" and Martin Scherzinger, "Heideggerian Thought in the Early Music of Paul Hindemith (With a Forward to Benjamin Boretz)." Concerning repetition: if we like triune categories, we could use those set up in my article, "Repetition." The bell-presentations would be, not "repetition" or "slavery", but "*répétition*", a kind of unfolding self-teleology.
7. Hegel, *Phenomenology of Mind* (1807), translated by J.B. Baillie (London: Allen & Unwin, 1931). From section B 4 A, "Indepen-

dence and Dependence of Self-Consciousness: Lordship and Bondage.” This kind of phenomenology describes musical consciousness in general. My emphasis on two contrasting characters in the music (figure, ground) is somewhat artificial.

8. Of course the two spaces are isomorphic, not independent. Their group structures are identical,  $\mathbf{Z}_{12}$ , which means group theory “forgets” the musical distinction crucial to this piece—a kind of “forgetful functor” from the **music** category to the category **group**. In fact we will locate the musical action (in the musical sense) of the piece precisely in this moment of forgetfulness.
9. This idea is, by chance, also developed in Steven Dembski’s article in this issue, “Ideas of Order.”
10. Benjamin Boretz, *Meta-Variations: Studies in the Foundations of Musical Thought*. Reprinted by Open Space, 1995. On pp. 94ff, Ben defines “structure” in terms of “coherence” and “complexity,” each explicitly defined. This is elaborated in pp. 320ff (“Analysis and Comparison”), especially on pp. 322–3, as “content articulated over a particular time-extent,” more in line with our usage above, though Ben—citing Goodman—identifies time as the only presentational dimension, where we would admit any. (Goodman: “. . . there is no change that does not involve time . . .,” *Meta-Variations* p. 322.) But most explicitly, on p. 103 (in “Music-theoretical Systems, Aesthetics, and Ear Training”), Ben says: “And the particular orderings determined as being imposed on those [syntactical] relations by *observed* orderings of the interpreting quale-elements may be called the *structure* of the work.”
11. The score contains an error: in bar 74, the second half-note triplet in the oboe should be E, not F, preserving the parallel fourths in this line.
12. There is an error in the score: bar 132 oboe should have E $\flat$ , not E.
13. *The I Ching or Book of Changes*, Richard Wilhelm translation, Bollingen Series XIX, third edition, pp. 3-9. Princeton University Press, 1967.
14. Op. cit., p. 379 (Book III: The Commentaries).