

Cycles and Wedges in Berg op. 4

Berg *Altenberg Lieder* op. 4, no. 2:

As other analyses of his music have made clear, Berg often uses symmetrical divisions of the chromatic scale as the foundation for deriving the pitch content of his compositions. In op. 4/2, this apparent foundation is the octatonic scale. While each individual octatonic scale is not perfectly symmetrical within the octave since it does not directly map to its own inversion, the inversion of an octatonic scale does create another octatonic scale and thus has symmetrical properties. The pseudo-symmetrical nature of the octatonic scale becomes more obvious when we view the scale as a combination of multiple cycles, interleaved into or overlaid onto one another. It is through exactly this mixing of multiple cycles by which Berg constructs his octatonic sound fields in op. 4/2.

A testament to his compositional ingenuity, Berg does not construct these octatonic sound fields in the same way. If we look, for example, at the horn and bassoon lines of mm. 3-4, we can see the culmination of an octatonic scale as shown in Figure 2. In these bars, Berg linearly expands a string of major-third sonorities, each separated from the next by a minor third. One can see thus how Berg has overlaid one 3-cycle on top of another at the distance of a 4-cycle to culminate in an octatonic pattern. A second example of a prominent octatonic flavor occurs in the vocal line of mm 1-2. The two descending perfect fourths separated by a half-step in measure 2 are particularly informative, for as Figure 2 shows, the octatonic scale can also be derived from two 3-cycles separated by a 5-cycle. This 5-cycle moves even more conspicuously into the foreground with the solo cello arpeggiation at the end of bar 6.

Berg also relies on single cycles in this piece as the basis for lines and sections, presumably in relief to the predominant sonorities of mixed-cycle pitch content. At the middle of bar 5, for example, a world of whole-tone harmony opens up in the orchestral parts, unmitigated by non-member tones until near the end of bar 6. Acting as a sort of linear glue between the octatonic sound of bar 4, through this whole-tone area, and to the stark chord in bar 7, a chromatic cello line descends from an $e\flat$ to a $c\sharp$, an inner-voice manifestation of a 1-cycle that delimits the major-third sonority used so prominently throughout the work.

This chord in bar 7 to which the cello line leads may come as a mild surprise to the listener. In a piece of otherwise unquestionably non-tonal harmonic surroundings, the bar-7 chord stands as a little window back to tonality, sounding like a V_7^{b9} in B-minor. The chord can

also be viewed as the combination of a 3-cycle in the upper voices with an $f\sharp$ in the lower voices, i.e. a 3-cycle+. Perhaps it is just this ambiguity between tonal and atonal worlds that Berg seeks to elucidate through his use of this chord at this climatic point in the song. As a 3-cycle+ sonority, the chord in bar 7 also stands as a seed for the octatonic material, all of which derives from the combination of 3-cycles with non-member tones (although the non-member tones are merely other 3-cycles).

Finally, I would like to pull the $f\sharp$ out of this chord in bar 7, the $f\sharp$ of course being the crucial tone that transforms the 3-cycle into a mixed harmony, and show how Berg reinforces the important role of the $f\sharp$ throughout the piece. One only has to look at the first and last notes of the orchestral part to see that the $f\sharp$ acts as a kind of bookend for the accompaniment, sounded by the piano at the beginning of the piece and then transferred to the basses at the end where it closes a canon between the voice and cello. Also, the voice outlines a sum-10 wedge in bars 3-4 as shown in Figure 3, this wedge having $f\sharp$ as its axis of symmetry. Via this wedge of alternating notes, Berg moves progressively from one interval to the next largest interval by step. Thus, the wedge displays a mini-exposition of the multitude of interval cycles used in the song. But despite the variety of interval cycles in this piece, Berg organizes almost all of them around the normative structure of the octatonic scale, thereby giving cohesiveness to a fairly complicated sonic texture.

Berg *Altenberg Lieder* op. 4, no. 3:

Much as the wedge plays a significant role in op. 4/2, the wedge becomes increasingly important as a fundamental structural device in op. 4/3. For this song, the wedge is the normative structure that imparts symmetry of the chromatic scale to the piece. The proliferation of these wedges also leads towards a saturation of chromatic information, perhaps foreshadowing twelve-tone techniques that became more standard for atonal composers in later parts of the century.

The wedge beginning in bar 18 most clearly shows how Berg leads to an aggregate pitch collection. This wedge appears as a result of the build-up of tones in the orchestral part. Figure 5 organizes the notes into a more clearly visible wedge structure, specifically a sum-9 wedge. The wedge does not directly unfold to produce the aggregate since the notes $b\flat-a-c-b\sharp$ exist as apparent non-wedge members, although as Figure 5 shows, the notes $a-c$ are a wedge pair (which would have preceded the first notes of the wedge), leaving only the $b\flat-b\sharp$ as stranded and

separated wedge members. This same wedge is evident in the opening A-section of the piece, this time verticalized instead of introduced note-by-note. If one examines the vertical spacing of these opening chords, however, the same wedge structure as is shown in Figure 5 reveals itself, only now distributed through the registral breadth of the orchestra. Berg allays the monotony of repeating this aggregate by rotating the notes through different instrumentations in these opening bars, thereby creating a sense of motion when in fact the harmonic sonority is completely static.

The saturation of chromatic pitch-class content in the opening and closing chords is something that perhaps Berg plays with in the melody of the piece. Conspicuously absent from the pitch-class content of the A-sections' melodic line is the note $e\sharp$, as Figure 6 makes clear. Figure 6 also shows how the melodic line in these parts is built from a collection of local 3-cycles, as well as having a reflected mini-wedge at the beginning. Thus the opening and closing vocal lines relate to the aggregate in the orchestral part but include a tension due to the missing note. The "unfinished business" of the missing $e\sharp$ (to use Perle's terms) is resolved in bar 13, where the vocal line begins a contour that implies a transposed re-entry of the main melody. This contour goes astray by bar 15, however, possibly due to lack of support from the original aggregate cluster.

The harmonic support for this B-section melody, though, does include similar sections of aggregate completion and wedge formation. Starting in bar 8, Berg starts accumulating chromatic pitch-class saturation. This saturation does not result from an obvious wedge structure here, but instead is built from clusters of whole-tone content. For example, in bar 9 we see a proliferation of even whole-tone members [0268] and a use of odd whole-tone members [1359E] in bar 10. By the beginning of bar 11, however, two notes are noticeably lacking from a complete aggregate; again, it is $e\sharp$ that has played hooky, this time joined by $g\sharp$. It should be no surprise, therefore, that these two same notes begin a wedge that brings Berg to the end of this bridge section, this wedge shown in Figure 7. Much like Berg displaces wedge members in the closing section, here too Berg removes the $d\flat$ and $b\flat$ members from the wedge to create a repeated interval that, while seeming like a separate motive, really belongs to the wedge itself.

So just as Berg needed multiple cycles to control and organize the dense octatonic structure of op. 4/2, Berg requires a structural tool in op. 4/3 to deal with similarly dense pitch content. While other cycles are noticeable in this song, here the wedge truly rises to become the main organizational tool. Since a wedge is basically two interleaved 1-cycles, we can therefore see how both songs use the intertwining of similar yet separate cycles to control pitch content.

CYCLES and WEDGES in BERG op. 4

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Figure 1: Form of op. 4, no. 2

<i>Section:</i>	A	B			A'
<i>Measures:</i>	mm. 1-3	mm. 3-5	mm. 5-6	mm. 6-7	mm. 8-11
<i>Character:</i>	octatonic	octatonic	whole-tone	mixed	octatonic canon

Figure 2: Octatonic Scale with various derivations; op. 4, no. 2



Figure 3: Melodic Wedge; op. 4, no. 2, mm. 3-4



Figure 4: Form of op. 4, no. 3

<i>Section:</i>	A	B		A'
<i>Measures:</i>	mm. 1-8	mm. 8-11	mm. 11-17	mm. 18-25
<i>Character:</i>	agg. wedge	whole-tone	bridge wedge	agg. wedge

Figure 5: Wedge becoming aggregate; op. 4, no. 3

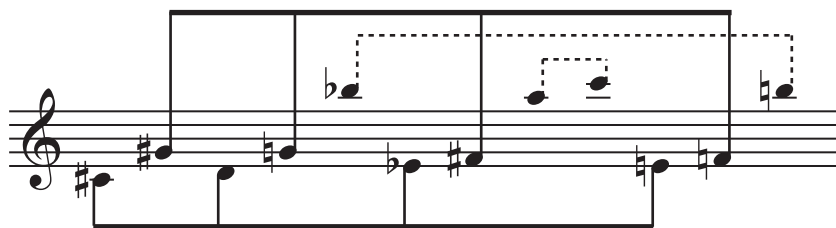


Figure 6: Melodic PC content; op. 4, no. 3

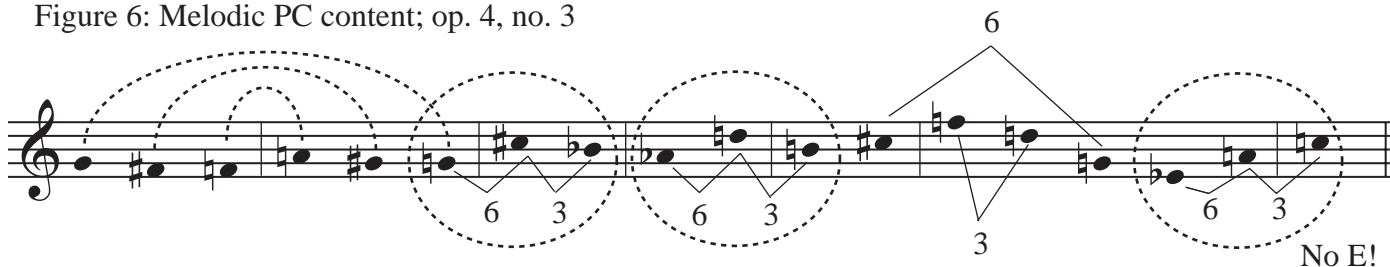


Figure 7: Bridge wedge; op. 4, no. 3, mm. 11-16

