

Analyses of Varèse's *Density 21.5*

George Perle:

For George Perle, the compositional kernel of *Density 21.5* is the division of the octave into symmetrical parts. The main forms of this division throughout most of the piece are the 3-cycle and the 6-cycle. Perle also explicitly reminds us of how, just as the 6-cycle evenly partitions the octave, the 3-cycle evenly partitions the resultant tritone from the 6-cycle. Looking at the opening nine bars of the work, Perle contends that the notes *c#-g-db* are members of one 6-cycle with the notes *e-bb* members of another embedded 6-cycle, both 6-cycles linked as part of a larger 3-cycle (12); the *f#-a-c* notes merely act as passing or neighbor tones. By establishing this diminished-seventh sonority (*c#-e-g-bb*) at the beginning, Varèse creates, according to Perle, a "closed cyclic system" as well as a composition problem, since such a closed system does not allow for modulation or transposition to other sonorities due to the symmetrical properties of this closed system (12-13). Varèse can only continue on with the piece by "wilfully breaking" this symmetry (13).

Throughout Perle's analysis, one finds other examples of where Perle sees Varèse running into apparent compositional dilemmas. One wonders why Perle adopts such seemingly veiled deprecatory remarks, as if the piece were not conceived as a whole before pen was put to paper. For instance, Perle brings our attention to bar 11, where the static nature of the original 3-cycle sonority is broken by continuous transposition of the tritone via a 1-cycle until bar 13 where our "home key" of *e-bb* appears (75). Here, the pause before bar 14 is seen as some sort of surprise to composer of the piece: "Because in all the excitement he [Varèse] suddenly finds himself right back where he had started, in the closed system of the diminished-7th chord" (75).

Further discussion by Perle centers on issues of "unfinished business" as a means to split the form of the work into two parts of roughly equal length; Part One spans mm. 1-28 and Part Two spans mm. 29-61. Part One concludes with a *c#* that was "missing" from the sonorities implied by measures 13-17 but "ends with a question mark," as non-cyclic tones such as *d* and *eb* appear here (77). The tritone associate supposedly implied by the *b* in measure 18 only finally appears in the penultimate bar of the piece as an *e#*.

I am not sure I can hear these "missing" tritone partners to which Perle refers, but he does, after glossing over most of what he refers to as Part Two, give a good explanation for the closing bars of the work. Perle points out that from bar 56 until the end, we find no instance of the minor third, which had been a crucial structural interval throughout the piece up until this

point (79). Varèse, in these closing bars, reverts to the use of a whole-tone scale, i.e. a 2-cycle, although Perle does not explicitly call it that in his text. At this point in the work, "we recognize a *new* background structure" (79). I think Perle's use of the term "background structure" here is indicative of his general method of analysis, whereby Perle seeks not to simply explain and connect surface details but to find some sort of basic underlying principle by which the composer has organized the piece.

Other Authors:

I think any issues I have with Perle's analysis of *Density 21.5* are mostly related to the fact that in Perle's writing, he did not seem to be trying to give some sort of exhaustive analysis but was rather using the work to illustrate some key analytical concepts. It is sadly ironic, then, that where other authors have specifically sat down to analyze *Density 21.5*, their insights seem to fall short of those made by Perle.

The semiological analysis by Nattiez may be the most notorious analysis of *Density 21.5*, at least in terms of the length and depth to which it analyzes the piece. I must admit I did not read the nearly 100 (!) pages of Nattiez's analysis, but some very questionable judgments are quickly evident. For example, Nattiez breaks the piece into three separate parts, the divide between the second to the third part occurring in the middle of bar 42 at the quarter note rests (247). Not hearing mm. 41-43 as a continuous phrase that echoes the opening bars seems so counterintuitive to my ears that I had difficulty reading any further. Fortunately, Jonathan Bernard exposes in his article many of Nattiez's blatant and flagrant analytical errors (212), so I felt justified in my brief assessment.

Bernard views this work as germinating from two motivic nuggets, one which he identifies as the chromatic trichord at the beginning (*f-e-f#*) and calls group (x), the other which he identifies as the trichord (*e-f#-g*) and calls group (y). Bernard proceeds to go through the piece, locating these groups wherever they appear, and ultimately develops a sophisticated graphical history of these motives as they move through a variety of registers.

Marion Guck also offers a fairly complicated and dense graphing history of the piece on page 342 of her article. She views the interval system of *Density 21.5* as having undergone a "mutation in the second half of the piece, where minor-third chains replace tritone primacy" (346). We can thus see that she, too, breaks the work into two halves like Perle, although she focuses more on the quality of each interval and not how they are necessarily related. Most of

her article is a very detailed walk through the surface of the music, with a lot of poetic descriptions of things "twitching" and "wobbling" with sounds that "flash briefly in the surrounding silences" (339).

One of the more insightful views into the structure of the piece is offered by Jeffrey Kresky. He points out how the three main statements of the opening theme in bars 1, 15, and 41 map directly to the opening theme itself. In other words, the first three notes of the theme are *f-e-f#*, and it is precisely at these pitch levels in this exact order that Varèse places the two other literal repetitions of the initial motive. Certainly, bars 9 and 21 show other motivic work, but these other instances are only rhythmically related and do not duplicate the theme's exact interval structure.

Of course, with all of the implicit diminished-seventh chords in this work, it does not seem strange that one author has offered the view that the piece has a tonal background. James Siddons, in a stretch of the imagination, conceives of each his divisions of the piece as outlining tonal triads and dominant-seventh chords, certain sections leading to others via means of a large-scale authentic cadence (306-307). He goes on further to say that the last few bars derive from a dominant to altered-tonic cadence in B-minor (307). In fact, he becomes so tied to this view of the composition that he calls the *d* at the beginning of measure 59 a possible "misprint," reasoning that it is "difficult to relate to earlier events in the piece" (309). In a final bout of seeming confusion, he remarks: "In evaluation of Varèse's compositional method in *Density 21.5*, it may be said that he was not consistent in the use of his ideas" (310). I do not mean to canonize all composers, but it does seem like the ultimate escape hatch if one has to resort to saying that one's theory is consistent while the composer is not.

Personal Analysis:

Of these previous analyses, George Perle's comes closest to matching my own perception of *Density 21.5*. When playing through the work, I sense a sound field of diminished-seventh-type sonorities and a permeation of upward chromatic motion. Upon further inspection, the melodic derivation of the each note in the piece can be organized under a series of 3-cycles, each consecutive 3-cycle a transposition of the last by rising half-step. As Figure 1 shows, this progression continues without break until almost the end of the work, at which point a radical shift to a pair of 2-cycles occurs. My graph normalizes the pitches of the flute into a register that more clearly allows one to see the upward chromatic motion of the 3-cycles. I have made an

effort to keep the basic voice leading of the piece intact, though, despite the large melodic leaps in the foreground.

By viewing the piece as a succession of 3-cycles, one has to relegate a fair amount of surface pitches to a non-member status of these cycles, the non-member pitches functioning as chromatic neighbors or passing tones. Often, Varèse uses such notes to transition from one 3-cycle to the next. The most apparent example of this modulatory quality appears in bars 31-36, the transition noted on my graph with an arrow. Here, one may wonder why Varèse suddenly chooses to repeat the pentatonic figure of *b-f#-a* in an otherwise non-tonal piece; the *b*, though, acts to bridge the T_2 3-cycle from bar 31 to the next 3-cycle, finally culminating in the triple-fortissimo *c* in bar 36. The dynamic marking evinces how Varèse thought of this *c* as a climatic point, which releases the tension of the passing-note *b*. At the beginning of the piece, too, we see the use of such a modulatory technique. The *f#*, originally in the position of a structural tone, clearly acts as a transitional non-member of the current 3-cycle once the *c#* appears.

One weakness of my analysis is that I have ignored the issue of register, an integral facet of the composition's melodic contour. Varèse is obviously exploring the limits of the platinum flute's range since the instrument is known for its ability to play through extremes of register with aplomb. Personally, I think *Density 21.5* is written in a rather free-form, improvisatory-like style, based on some simple background harmonic areas through which the melody travels. Therefore, I am hesitant to draw specific connections between particular notes and ranges in the piece much as I would be hesitant to infer any sort of overly detailed plan regarding a fantasia by C.P.E. Bach. I do, however, see a basic large-scale plan, the form of the piece being divisible into five main sections. These sections are based primarily on the reappearance of melodic motives rather than any sort of structural harmonic organization underlying each section. But it is precisely this play of motives through a cyclic background that shapes the forward momentum of the work.

WORKS CITED

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Figure 1: Successive 3-cycles in *Density 21.5*

Trevor de Clercq, TH513, 09/17/06

A

②
⑪ ⑫ ⑬

T_0 T_1
 T_2 T_0 T_1

$T_0 = [0369]$

$T_1 = [147T]$

$T_2 = [258E]$

A'

⑮ ⑯ ⑰
⑱ ⑲
⑳ ㉔

T_2 T_0 T_1
 T_2 T_0
 T_1 T_2

B

⑳ ㉑
㉓ ㉓
㉔ ㉖

T_0
 T_1
 T_2
→
 T_0

A''

㉗ ㉙
㉚ ㉚
㉜

T_1
 T_2
 T_0
 T_1
 T_2

B'

㉝ ㉞
㉟
㊱

T_0 T_1
2-cycle (T_0)
2-cycle (T_1)