

## Basic Cells and Combinations in Varese's *Ionisation*

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To the Ballgame" is an allusion to, of course, Charles Ives, who remains an influence upon my work.

One quality I wanted for *Baseball* is that it be primarily acoustic. Though filled with details and cross-references for the connoisseur, little in the appreciation of it should depend upon the listener's knowing English, and in this respect it differs scarcely from other musical works whose words happen to be English. If its subtleties and complexity are sufficient to demand rehearing, then perhaps it is ultimately not for broadcast over radio or in a concert hall, but for media that can be easily reexperienced, such as records and audiocassettes. I also wanted *Baseball: America's Game* to epitomize the kind of composing possibilities that are available, even to someone as musically limited as myself, in the late twentieth century.

### Introduction

Searching for new music sounds, such as sounds of percussions, has fascinated a lot of avant-garde composers in this century. Among these is Edgar Varese whose *Ionisation* (1930-33) is one of the earliest works composed for a percussion ensemble.

The prominent element of *Ionisation* is not only the timbre, but the development of the motives which are called basic cells in this essay. The basic cells are so organic that they proliferate as if they are really alive and rule the whole of the composition. As a result, the form of the piece deviates from the conventional forms like Sonata Form.

The percussion is an instrument which has a wide range of partials; the timbre of percussions is extremely varied in each. It is interesting to learn how Varese deals with the timbre of the percussions as well as the basic cells. In this essay, the basic cells, the structure of the piece, and the timbre of the percussions will be discussed.

### The Basic Cells

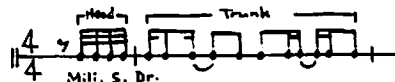
There is no absolute answer in music analysis; in other words, there remains considerable room for interpretation. But, although we may say anything about the basic cells of *Ionisation*, by following the similar patterns we may discern what are the basic cells.

In *Ionisation*, thirty-four different percussions plus Tubular Bells, Celesta and Piano are played by thirteen performers. Some of the instruments play the leading roles which are used to sound important phrases; while the others play the secondary roles which are used to enhance the density or energy. The former are Military Snare Drums, Tarole, Maracas, Bongos, Bass Drums, Chinese Blocks, and Anvils; and the

latter are Cymbals, Gong, Tam-tams, Sleigh-bells, Triangles, Sirens, and instruments of definite pitch: Piano, Tubular Bells, and Celesta.

Throughout the piece the most characteristic rhythm-phrase is played by the Military Snare Drum in measures 9 (with an upbeat), 17, 21, 60, 70, 79, etc. This rhythm-phrase is Basic Cell A. The prototype, which has a head and a trunk, appears in measure 17 (with an upbeat), Example 1.

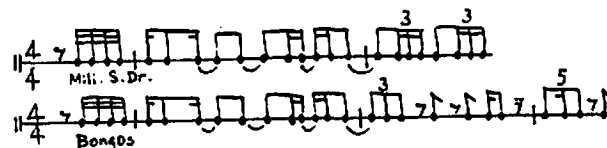
Ex. 1 Basic Cell A Prototype, mm 16-17



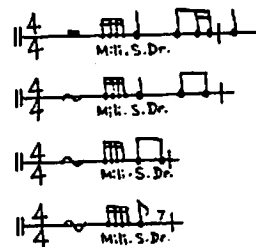
As I mentioned before we may say anything about basic cells: so that we could say either the longest or the shortest phrase is the prototype. The reason why we call the rhythm-phrase of measure 17 the prototype is that it is the middle in length between the longest and the shortest; it is stable, and the attacks after the trunk are very changeable. It is just convenient to explain Basic Cell A by calling it the prototype in measure 17. We do not mean that Varese must have thought the phrase of measure 17 as the prototype.

Basic Cell A expands and contracts. The process of expansion and contraction resembles vermiculation -- the movement of amoebae. The expansion and the contraction do not always appear chronologically. This is one of the reasons why we call it not a motif but a basic cell. The trunk of Basic Cell A expands in measures 8-10 and 23-26; and contracts in measures 36, 39, 40, 56, Ex. 2 and Ex. 3. The head of Basic Cell A is contracted into even grace attacks.

Ex. 2 Expansion, mm. 8-10, 23-26

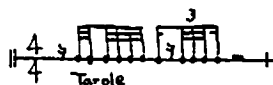


Ex. 3 Contraction, mm. 36, 39, 40, 56

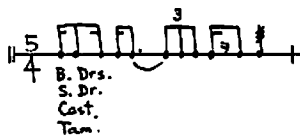
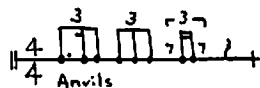


There are some metamorphoses of Basic Cell A. The head of Basic Cell A is composed of short durational values. The phrase of measure 18 played by Tarole seems to be derived from the head, Example 4. The metamorphoses of the trunk without the head is also present. The typical ones are Anvils of measure 51 and the phrase of measure 66, Example 5.

Ex. 4 Metamorphosis from the head, m. 18



Ex. 5 Metamorphosis from the trunk, mm. 51, 66

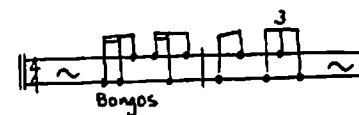
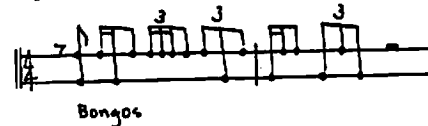


Basic Cell A is always accompanied by the characteristic phrase which we call Basic Cell B. Basic Cell B is not only played by Bongos, whose first appearance by Player Three is in measure 9, but is also played by the Bass Drums, Player Three, in measures 21-22 or Military and Tenor Drums, Player Four, in measures 23-34. The distinctive feature of Basic Cell B is its simple rhythm displayed in two levels, low and high, Example 6; while that of Basic Cell A is a complicated rhythm presented in the same level. So that, although, both cells A and B are played simultaneously, they are easily recognized. Basic Cell B also expands and contracts, Examples 7 and 8.

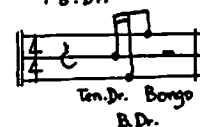
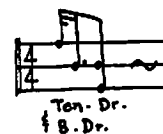
Ex. 6 Basic Cell B Prototype, m. 9



Ex. 7 Expansion, mm. 28, 36, 61, 64



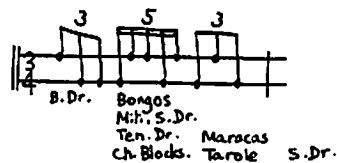
Ex. 8 Contraction, mm. 1, 38



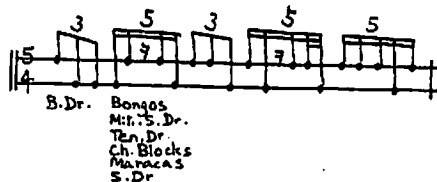
A new cell made of a triplet, a quintuplet and a triplet, played in Tutti, appears in measure 44. Because it spreads between two levels, it

can be said that the new cell is derived from Basic Cell B. Yet it does not accompany Basic Cell A and is so characteristic that we call it Basic Cell C, Ex. 9. Basic Cell C only expands, Ex. 10.

Ex. 9 Basic Cell C Prototype, m. 44



Ex. 10 Expansion, m. 45

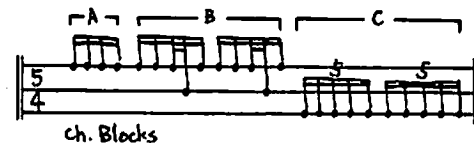


Basic Cell C's triplet independently precedes in measures 39-40 and so does the quintuplet in measure 32 played by lower Chinese Block. This phenomenon resembles the metastasis of cancer cells or the cactus bud which grow at different places of the cactus body. Therefore, the form of Ionisation deviates from traditional forms. We associate Gaudi's metastatic architecture with Varese's musical structure.

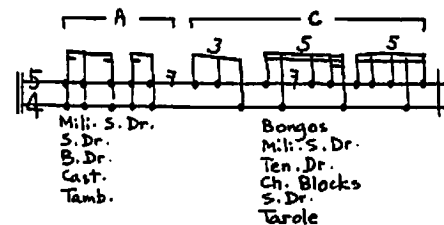
In Ionisation the three basic cells are combined. The first combination of Basic Cells ABC appear in measure 32 sounded by Player Seven, Ex. 11. It is divided into three groups of attacks: the first group is the same as the head of Basic Cell A; the middle, which spreads

in two levels, is the same as Basic Cell B; and the last, composed of quintuplets, is derived from Basic Cell C. The second combination of Basic Cells A and C appears in measure 73, Ex. 12. The first half of this combination is derived from the trunk of Basic Cell A and the second half is originated from Basic Cell C. The last combination of Basic Cell C and A appears in measure 39. The triplets in the first half of the measure come from Basic Cell C and the second half, with the grace attacks, from Basic Cell A, Ex. 13. The metastases of the basic cells cause these combinations.

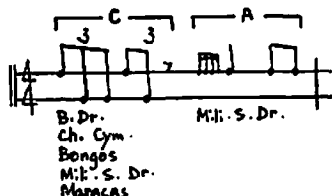
Ex. 11 Combination of Basic Cells ABC, m. 32



Ex. 12 Combination of Basic Cells AC, m. 73



Ex. 13 Combination of basic Cell CA, m. 39



The Structure

Snare Drums, Tenor and Bass Drums, Bongos, Chinese Blocks, Anvils, etc. are in charge of the basic cells which construct the framework of the piece while other instruments such as Sirens, Cymbals, Gong, Tam-tams, Sleigh-bells, Triangles, Castanets, etc. are in charge of punctuation and enhancement of energy. Even the Piano does not play any melodic lines but tone-clusters to punctuate and enhance the energy. The important thing for those secondary-role instrument is crescendo and decrescendo. Tremolo is very often used to increase or decrease the energy through the entire piece.

The piece is divided into two sections each of which has two parts;

- I. 1. Mm. 1-37
- 1-8 Basic Cell B
  - 9-12 Basic Cell A and Basic Cell B
  - 13-16 Basic Cell B
  - 17-37 Basic Cell A

2. Mm. 38-50

- 38-43 Basic Cell C and Basic Cell A
- 44-50 Basic Cell C

II. 3. Mm. 51-74

- 51-55 Basic Cell A
- 56-65 Basic Cell A and Basic Cell B
- 66-74 Basic Cell A and Basic Cell B

4. Mm. 75-91

- 75-91 Basic Cell A and Basic Cell B

Measures 1-8 may be thought to be the introduction of Section I. But its recapitulation strangely appears in mm. 13-16. It means that it is not just an introduction. This is the reason why we call the form of the piece a cactus. Mm. 38-43 are the transition between Parts 1 and 2 where Basic Cell C and Basic Cell A are combined. Section II starts with the recapitulation of the introduction. But this time no Drums are played and Basic Cell A, played by Anvils in m.5, is instead present. In measure 75 Part 4 starts and instruments of definite pitch enter.

The Timbre

Curt Sachs divided music instruments into four groups: Membraphone, Aerophone, Idiophone and Cordaphone. This classification is very useful in analyzing the timbre of the instruments of Ionisation. According to this system of categorization, Drums belong to the Membraphone, Metal and Wood Percussions belong to the Idiophone, Sirens belong to Aerophone, and Piano belongs to Cordaphone.

Example 14 is a table of Ionisation's orchestration. In the table, the instruments are placed in five categories based on the above classification. However, Metal and Wood are separated and Tubular Bells and Celesta are in the same category as the Piano since partials and character of the instruments are considered important. In each category, each instrument is placed from the bottom to the top according to the range of its partials. The instruments with high partials, such as

Triangles, Maracas and Tarole are placed in the top of each category. The lined squares indicate appearance of the instrument and one box indicates two measures of the piece.

The table clearly shows the timbre and formation of the piece. In measures 1-5, no Wood percussion is played at all; low Drums play Basic Cell B with Metal and Sirens for a background. This metallic sounds characterize the introduction. And the recapitulation of the introduction is clearly shown in measures 13-16.

From mm. 23-51, punctuated by Basic Cell C in m. 44, Wood and Drums (except Snare Drum without snares) are thickened and thus the density is increased. The line of m. 51 shows the most distinguished division of the piece as Section II starts in that measure. The introduction is repeated here but this time no Drum is played and Anvils enter instead playing Basic Cell A. Measure 75 clearly shows the start of Part 45 of Section II. Here, instruments of definite pitch enter, low Metal become important, and instruments with partials such as Triangles, Anvils, Sleigh-bells, Maracas, Guiro, Slapstick, Claves, and Castanets completely disappear. The table shows vividly how Varese deals with the timbre. Ionisation ends mirroring its beginning -- a ppp dynamic and ascending sirens of the opening measures are reminisced with the sirens now descending and a pppp dynamic.

#### Conclusion

We would like to emphasize the following: Ionisation has three basic cells which construct the framework of the piece and organically proliferate expanding and contracting. The basic cells metastasize and make combinations. The form of the piece looks like a cactus. The instruments are divided into two: the leading roles and the secondary roles. The timbre and the form are very carefully dealt with. The timbre is closely related to the form. Varese's music is not arbitrary.

