3ème Regard sur l'Enfant-Jésus
L'échange
Olivier Messian

A Model using Elody

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The analysis of the piece is based on that presented by Riotte and Mesnage. It will be used here to explain the model built with Elody. For a complete analysis, you should refer to [Mesnage, Riotte 1990].

GENERAL STRUCTURE

The examination of the score quickly reveals that each system of 2 measures repeats the rhythm and the melody profile of the preceding system. Only the two last systems don't follow this rule: the pre-last consists in 3 repeated measures and the last is a distinct conclusive pattern. Therefore, the piece is structured around 3 distinct patterns, P1, P2 and P3. It can be divided in 3 sections:
    section 1 = 12 x P1
    section 2 = 3 x P2
    section 3 = P3
The continutation of this paper will only deal with the first section. The two last sections won't be detailled here but are present in the Elody document under the expressions Section2 and P3.

ANALYSIS

The pattern P1 consists in 5 different sub-patterns A, B, C, D, E (figure 1)

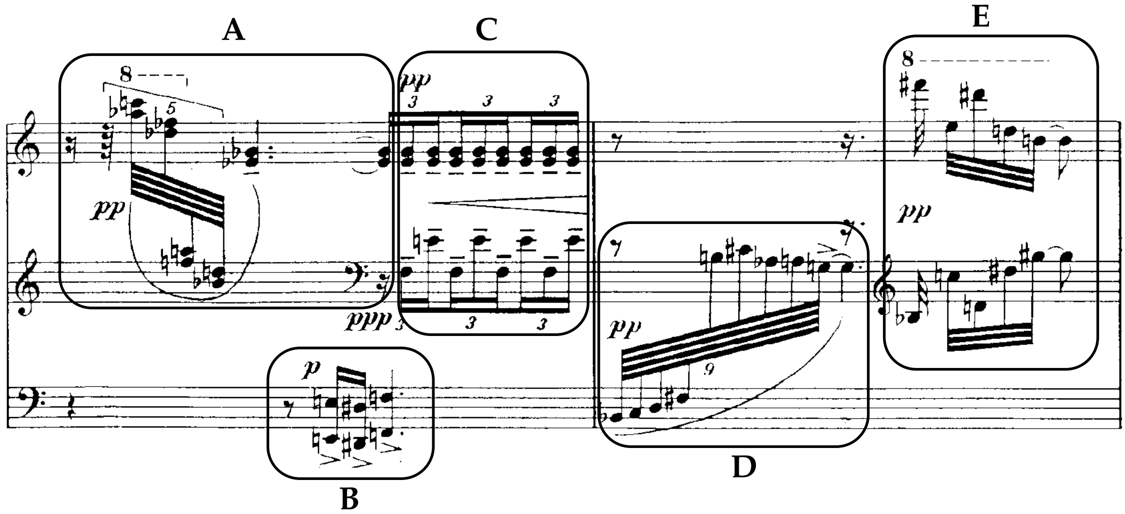

figure 1

The rhythm of P1 is constant all along the section. From one repetition to another and according to a constant position, each note of a sub-pattern is subject to one of the following transformation:

- 1/2 ton transposition up
- 1/2 ton transposition down
- repetition without change

These transformations are applied like follow:

```
A: (0 0) (0 0) (0 0) (0 0) (0 0)
B: (1 1) (-1 -1) (1 1)
C: (0 0 0) (0 0 0) (0 0 0) (0 0 0) (0 0 0) (0 0 0) (0 0 0) (0 0 0)
D: (1) (1) (1) (1) (1) (1) (-1) (1) (-1)
E: (-1 1) (0 1) (-1 1) (1 1) (1 1)
```

where 0 means constant, 1 means 1/2 ton upward, -1 means 1/2 ton downward, parenthesis denotes simultaneous notes from high to low.

IMPLEMENTATION

The different sub-patterns are built manually using the Elody constructors. These are the expressions MotifAC, MotifB, MotifD, MotifE where MotifAC corresponds to the sequence of the constant sub-patterns A and C. The rhythms are build using notes with proportionnal durations. Their values in the given tempo are adjusted by stretching the sub-patterns to the corresponding duration expressed in sixteenth notes (*dcroche* expression) using the *stretch* operator. For example:

```
      MotifD := stretch (D,  seq (noire, noire))
where noire  := seq (croche, croche)
and   croche := seq (dcroche, dcroche)
and   D is the sub-pattern D built using relative durations
```

By this way and at each step of the construction, the tempo may be made variable by abstracting the *dcroche* expression.

For each note, the attached transformation is characterized using colors: constant notes are colored in blue, rising notes are colored in red and descending notes in black. The sub-patterns are then mixed and putted in sequence to obtain the pattern P1 (figure 2).

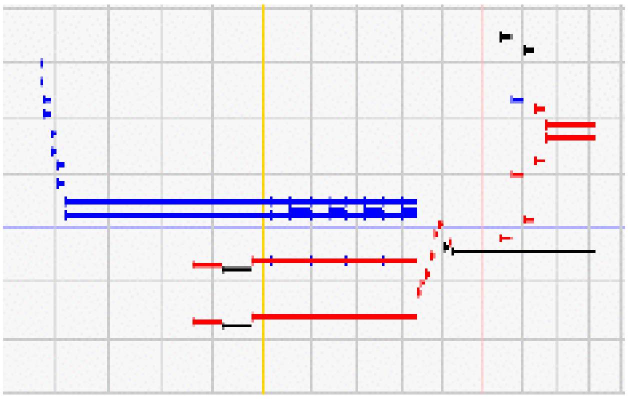

figure 2

Now, we'll abstract a red note and then a black note from the pattern P1 to create a 2 arguments function fP1, which will respectively transpose its red and black parts according to its arguments:

```
fP1 := lambda <C3 noir, C3 rouge : P1>
```

For example, the following expression `fP1(B2 noir, C#3 rouge)` will produce the pattern P1 where the red parts are transposed 1/2 ton up and the black parts 1/2 ton down.

In fact and in order to make temporal applications without modifying the rhythm defined in P1, the function fP1 will be stretch to the size of its identificator at each step of its construction ie:

```
     noir   := C3 noir
     rouge  := C3 rouge
fP1 := stretch(lambda<noir:stretch(lambda<rouge:P1>,rouge)>, noir)
```

To express all the section 1, we have just to specify the transposition interval for each system. We do it using two scales, chromatic ascending and descending (figure 3).

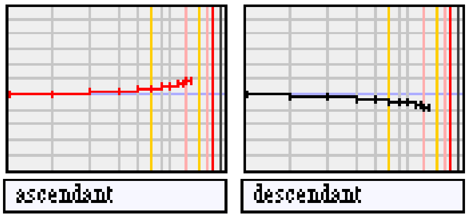

figure 3

We put then the function fP1 in sequence 12 times and we apply it the these two scales to obtain all of the first section of the piece (figure 4):

```
     Section1 := repete12 (fP1) (descendant, ascendant)
```

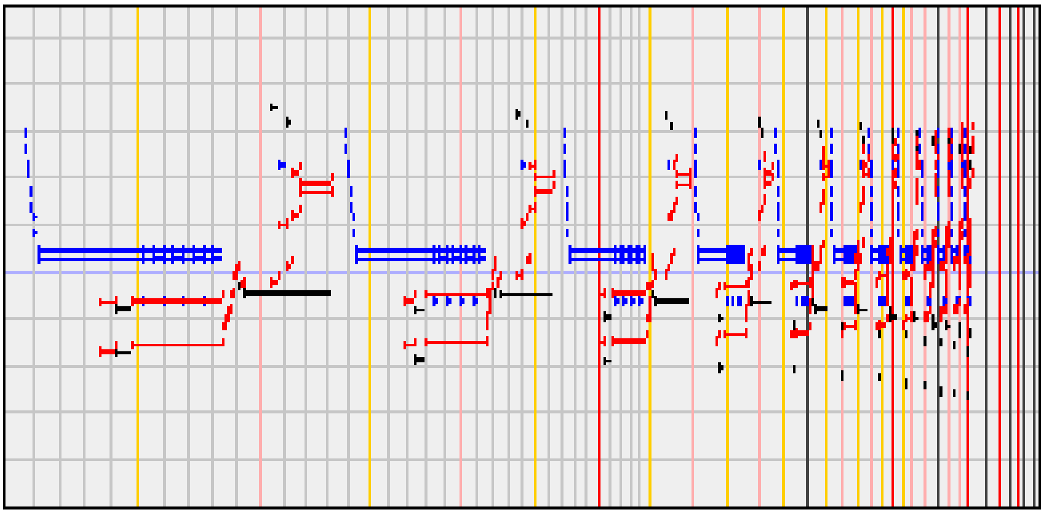

figure 4

References

[Mesnage, Riotte 1990] Un modèle informatique du *3ème Regard sur l'Enfant-Jésus* d'Olivier Messian. dans Actes du Colloque International “Musique et Assistance Informatique”, M.I.M. Marseille 1990, pp.188, 209