

The language of isobematic music: its definition and its repercussions for composition and analysis.

Introduction

It all started with a growing irritation at being told that my music was atonal. I found it profoundly insulting to have my music classified simply by what it is not – that it might even be written against or avoiding tonality! Categorically, my music is not written against anything or to avoid anything: in this case, tonality quite simply does not come into the equation at all. My music is written with its own criteria and with its own intentions, and with its own technical and aesthetic values.

Atonality, like post tonality or non tonality, defines by exclusion. It is perfectly understandable that in the beginning of any new musical breakthrough, words like this should exist because the innovations are not yet defined, they are nor quite clear. In spite of what Schönberg wrote, criticising Hauer's use of the word "atonal", it surely was at least partially justified in the early 1920's. But that we should be using the same terminology a hundred years later must be, at the very least, worrying: it implies an inability to define what is new. Surely at this juncture that must be wrong.

Would we use the same criteria for Schumann as we did for Bach classifying Schumann as a sort of non-Bach? Would we classify Mahler's music as post-Mozartean?

Theorists observe the past – even if it is the recent past – and, in classifying it, have tendency to regard the new as exceptions to a rule. The title of Alan Forte's pioneering work that has had, and still has, so much success and influence is "The structure of atonal music". Many or most of the examples presented are from the period 1910-1930 although the theory is presented as a norm for contemporary music as a whole. Not long ago, I came across a book by Ludmila Ulehla published in 1994 called "Contemporary Harmony", with the subtitle "Romanticism through the twelve-tone row" – surely the title and sub-title are two thirds of a century out of sync, at least.

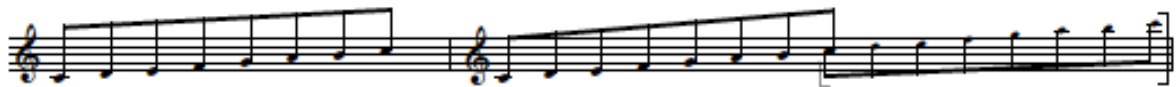
Of course, the past is important but the analysis of it should be presented as such. After all, what our immediate forebears did has helped to create the reality in which we live, but it should not shackle the future. And above all it should not be analysed in terms of an exception to something even older.

The real problem is that definition by exclusion – that is, negative definition – still leaves a variety of phenomena, or in this case musical languages, in the picture. Spectral music with its microtones and electronic music with the possibility of mechanically generated sounds (perhaps noises....) are lumped together with other languages like 12-note music, for example – after all they are all atonal.

Definition of a musical language

Let us look more closely at what I like to call isobematic music. Following a long-established trend of using words derived from the Greek to designate musical languages I have created this word coming from $\iota\sigma\omicron\varsigma$ (equal) and $\beta\eta\mu\alpha$ (step), to designate a musical language in which the basic raw material we use for composition is one of equal steps – normally semitones, although the steps could be quartertones or whole tones or, theoretically, indeed others. The important thing is the regular spacing of the repeated interval.

As a first step in our reasoning, let us start by observing the raw material of tonal music.



Ex.1 The major scale of Tonality

We have a scale of 7 irregularly spaced notes; at the 8th note (naturally therefore called the octave) the pattern is repeated and so on at every octave. Obviously we have equivalence at the octave, whether it be with the function of the tonic, or the dominant, or any other degree of this irregularly spaced scale. As it happens the octave is (after the unison) also the most consonant sound that exists. In writing this scale we only write a single octave of it: any more would be tautological, any less would constitute incomplete information. In fact, when writing it, we complete the scale until we reach the interval of equivalence.

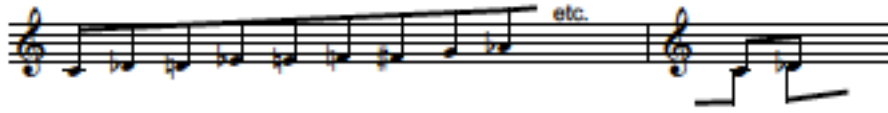
Let us now look at the octatonic scale (or the second mode of Messiaen's *Modes à transposition limitées*).



Ex.2 The octatonic scale

Messiaen writes the scale spanning an octave. However, he says that the scale has limited transpositions: there are only three since the fourth, he says, is the same as the first. It has the same notes although it starts in a different place. In effect he is telling us that the scale has equivalence at the minor third - that is every three semitones. Here the interval of equivalence is not an especially consonant interval: acoustically the major 3rd, perfect 5th and the 8^{ve} are all more consonant: so we see that equivalence and consonance do not necessarily coincide. In fact, following the example of tonal scales and completing the scale until we reach the interval of equivalence, we can (and should) write this scale with only three notes. Any more is tautological, any less incomplete.

Now if we apply the same reasoning to a musical language whose raw material is that of all semitones – an isobematic language with all the steps of equal size – our scales should be written as a single semitone; any more is tautological, any less incomplete.



Ex.3 the isobematic scale

Yet again, we complete the scale until we reach the interval of equivalence: this time, that of the semitone. All the notes of our raw material are equivalent – though not really consonant.

This sounds very like what is always said about the 12-note technique: all notes are equally important. However, there is a subtle but fundamental difference between equal importance and equivalence. The 12-note system talked of equal importance (probably referring more to the tendency towards tonal attraction) but maintained the octave equivalence that is one of the essential characteristics of tonality or modality (or heptatonic scales, in general).

To come back briefly to that increasingly confusing term, atonality, a majority of people talk of atonality but incorporate octave equivalence which, as I have shown, is anything but atonal. Joseph Straus' book, *An introduction to post-tonal theory*, begins like this:

There is something special about the octave. Pitches separated by one or more octaves are usually perceived as in some sense equivalent. Our musical notation reflects that equivalence by giving the same name to octave-related pitches.

Such an affirmation with absolutely no logical or theoretical justification makes all the subsequent observations at the very least, suspect. Even the affirmation that octave related pitches have the same name has historically not always been true.

In writing for the piano, for example, I do not have a repertoire of 12 notes, that may be distributed in any register of my choosing; I have 88 notes - all equivalent - in which all registers are equally represented. For in isobematic music **all** notes are equivalent: intrinsically there is no hierarchy. Consequently, recognisable relations are made note to note, that is, by interval - which we will express in terms of the number of semitones. By interval, I means real interval, for when we have equivalence of all notes there can be no such thing as the concept of interval class, or even compound intervals.

These structures are perceived by the interval between notes rather than by the notes themselves. Imagine the sky at night: we recognise certain constellations created by the relative positions of certain combinations of stars not by their position in the sky. If we look a few hours later the position will have changed, but the relative positions are maintained and the constellation remains recognisable.

Terminology

The time has come to mention one or two (of quite a number of) terms that are often used but that are fundamentally unsuitable and can lead to misunderstanding.

1. Firstly, **panchromaticism**. The word “chromatic” can only exist where the word “diatonic” exists. A chromatic note arose as simply a “coloured” version of a diatonic note: it is an exception to a norm. It understands a context in which D# and Eb are coloured versions of different degrees of the scale. Chromaticism therefore implies the existence of a scale of unequal steps and the word panchromaticism is etymologically a contradiction in itself; a sort of perpetual state of exception becoming the rule! Nevertheless we have come to understand more or less what we mean by the word.
2. More dangerous are terms like **compound interval**. Of course, in an isobematic context such a thing cannot exist as it presupposes octave equivalence.
3. **Step-wise movement** is also problematic: here it can only mean movement by semitone – or whatever may be the unit of isobematicism.
4. **Dissonance** is a fundamentally tonal term: in tonality, a consonance is self-sufficient; while a dissonance requires a context in order to be understood. In an isobematic language, there are only varying degrees of consonance.

A number of other terms also become obsolete (and misleading) in an isobematic context. These are simply a few examples.

Of course, this way of approaching the pitch organization of music also has its repercussions and parallels in the treatment of all other aspects of music – rhythmic organization, dynamics, texture, register, timbre, etc. etc. – in order to be able to define an overall musical language capable of sustaining real musical discourse. But there is no time here to do more than to define a few basic concepts and give some simple examples.

Isobematic criteria in analysis

Let us observe a couple of examples of isobematic concepts in pitch analysis.

In first place, let us look at the beginning of the slow movement of Webern's Concerto, Op.24:

The image shows a musical score for the beginning of the slow movement of Webern's Concerto, Op. 24. The score is in 3/4 time and consists of two staves: a treble clef staff (labeled 'A') and a bass clef staff. The treble staff contains a melodic line with notes marked with '8' and '11' above them, indicating octaves and 11ths. The bass staff contains a bass line with notes marked with '4' and '11' below them, indicating fourths and 11ths. Dynamics markings include 'pp', 'p', 'mp', and 'f'. At the bottom of the page, there are three brackets labeled 'R', 'IR', and 'R'.

Ex.4 Webern: Op.24, mvt.2., bars 1-28

This movement can be seen as an atonal adaptation of a tonal form – sonata form. By applying isobematic analysis we can observe clearly that the “exposition” (bars 1 to 28) has an incorporated repetition – in a sense, imitating classical practice. This is not immediately highlighted by a simply dodecaphonic analysis or indeed in a system where octave equivalence is applied. In fact, having discovered these subdivisions of the sonata exposition, we find that Webern’s indications of *calando* or of dynamics coincide almost exactly with these subdivisions.

To complement this, let us look at the beginning of the third movement of Boulez’ *Marteau sans maître*:

Ex.5 Boulez: Marteau sans maître, mvt.3, bars 1-6

The opening melody quite obviously uses various different intervals to characterize the flute melody. Interval 7 is constant; whereas interval 5 (its traditional octave-equivalent inversion) is utterly absent from the melody. More interesting still is the functional difference that exists between intervals 2 and 14 - or indeed, 10! – all of which are regarded of versions of the same phenomenon in Pitch Class Theory. Also interesting is the almost total absence of intervals 3 and 8 – the intervals that are immediately presented by the voice when it enters in bar 6.

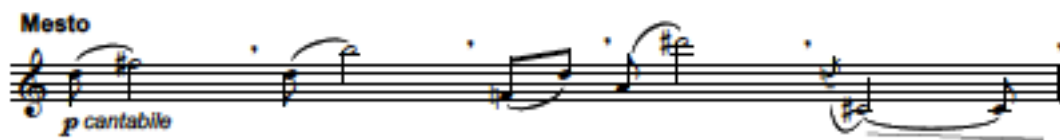
Isobematic language in composition

Isobematic thinking in composition can be applied to a number of very different areas. For obvious reasons I shall have to restrict my examples to very few.

I shall talk briefly about related intervals, interval families and hierarchies.

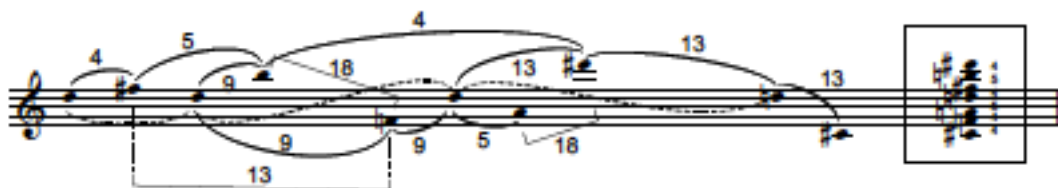
It has been said that the most difficult thing in composition is to write the first note! I would say that there is still very difficult to write the first three notes! However, as soon as two relativities have been set up a whole “family” of possibilities opens up.

As an example, I shall take the exceptionally simple opening to my Elogy II for solo flute.



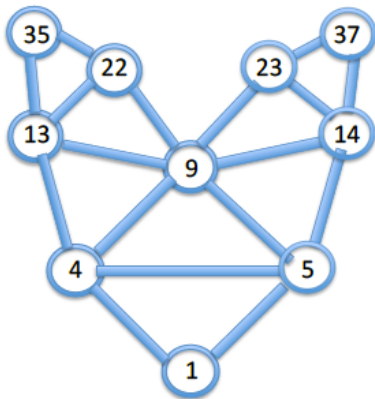
Ex.6 Christopher Bochmann: Elogy II for flute

I write an interval 4; I go back to the starting-point (D) and write an interval 9; I have immediately produced an indirect interval 5. I now write an interval 9 below (instead of above) the D; I so doing I have formed an interval 18 (twice 9) and more indirectly an interval 13. Now I repeat intervals 5 and 18; which produces another interval 13 and another 4....and so on. Finally, I write an interval 13 downwards from the initial D. If we look at the overall harmonic field we see that there is a certain regularity of 5-4-5-4 from top to bottom. The exception to this regularity is the low C#.



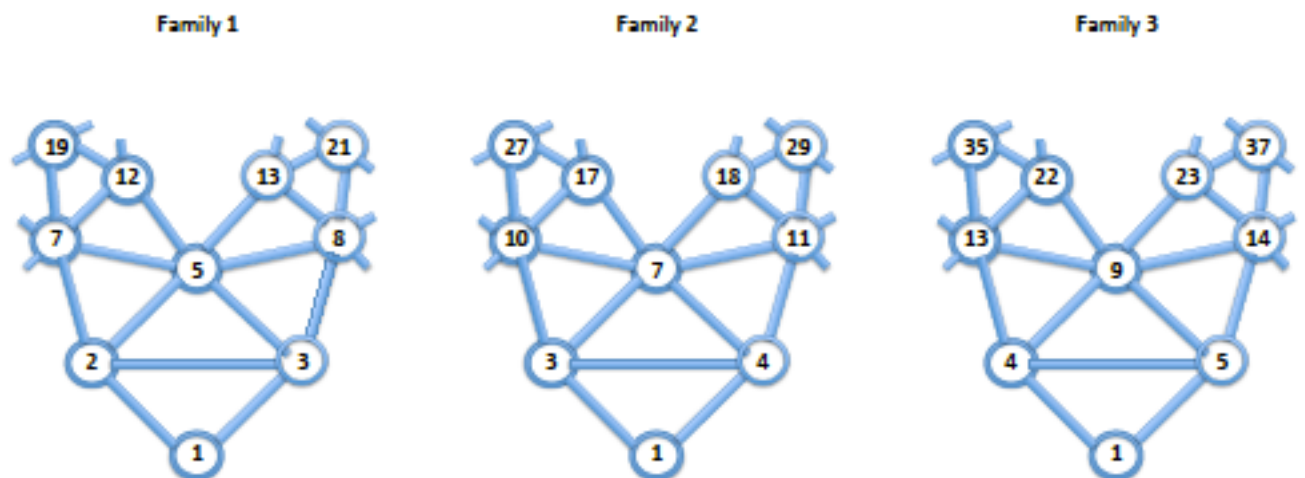
Ex.7 Interval structure

As it happens this is the last note of the introduction: so the irregularity opens up – I would say actually causes - the musical discourse that follows. I like representing these relationships in terms of a web, where the sum and difference between two intervals each form a triangle: this process is infinitely reproducible.



Ex.8 Intervals related to 4, 5 and 9

It is always interesting to be able to “reduce” the web this until we reach interval 1 - the isobematic unit - because in that way, we feel we have got back to the origin of it all, back as far as is possible, back to Adam.



Ex.9 The three main interval families

In looking at these webs, it very soon becomes clear that sequences like the Fibonacci or Lucas sequences are present within them. But to say that my music is based on the Lucas or the Fibonacci sequences, would definitely be putting the cart before the horse: in reality, a horse can do a lot more things than just pull a cart! I start with the horse.

To finish, let me try to show how isobematic thinking can be applied in analysis and composition at the same time.

In 2006 I began to write a commentary on Webern's Op.27 Piano Variations adding five instruments to the original work.

I decided to use Webern's original without any alteration: the piano plays exactly what Webern wrote, the only difference being that from time to time I have inserted rests that allow for more extended comments from the other instruments.

The work begins with Webern's original. The other instruments gradually add comments to this; these are directly derived from what the piano plays. The first intervals of the other instruments are those of the piano at distances that are in keeping with the harmonic fields that Webern has established. There was never any attempt to add material that adhered to any twelve-note principle.

As the movement proceeds, the added instruments gain importance and at times even make what the piano plays seem almost secondary; yet what these instruments play is all derived directly from Webern's original piano work.

It is my belief that in adding instrumental parts in this way, I am commenting directly and recognisably on what is in the original music. In fact, I would argue that this isobematic musical coherence is aurally more recognisable than that inherently produced by a twelve-note row. I still have to find a single person who having heard eleven notes of a twelve-note row will be able to sing me the one that is missing!

Some years ago, I remember a colleague saying that he felt that composers of atonal music were running out of ideas and that that was partly why a number of composers were veering back towards some sort of diatonic music. If you think of your music in the negative terms of A-tonality, to run out of ideas is not unthinkable – possibly even likely; but if you think of it in the positive terms of Isobematicism, the world opens up in front of you!