

THE EUROPEAN AND GLOBAL CONTEXT OF THE APPEARANCE OF THE ALEATORIC TREND IN MUSIC

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Abstract: *Aleatorism is the trend which appeared in music during the second half of the 20th century, as a result of the revolutionary movements in the field of composition methods; these revolutionary movements appear in the beginning of the 20th century.*

This revolution aimed to negate the compositional process with its two fundamental principles which presented themselves throughout the span of three previous centuries (17th-19th century), the Baroque, the Classical, and the Romantic era respectively.

Keywords: *Aleatorism, improvisation, stochastic.*

1. INTRODUCTION

The beginning of aleatoricism develops throughout the evolution of modern music from the first half of the 20th century.

For this reason it is necessary to recall the previous trends of European, as well as global music, and their evolution which characterizes this time period, starting from the beginning of the century.

These trends are:

1. atonalism-dodecaphonism-serialism
2. neomodalism (chromatic modalism)
3. neotonalism („extended” tonality use)
4. bruitism – real music – electronic music
1. Atonalism – dodecaphonism - serialism

Atonalism appears as a “rupture” caused by Arnold Schönberg, in the year 1905, when he declared the tonal-functional system out of date as a compositional technique, which included melodic, polyphonic-harmonic, and formal organization based on past musical guidelines (motives, themes), as well as the previous structure of friction between tonal and functional styles. Arnold Schönberg’s initiative will result in a process called atonalism.

This evolution has three phases:

Stage One – consists of the use of chordic dissonant structures linked freely.

Stage Two- the elaboration of dodecaphonic technique series by Schonberg; Alban Berg and Anton Webern share the same views as Schonberg but distinguish themselves by their originality.

Stage Three- took place after the Second World War and represents the continuation of the atonalistic evolution and occurs due to many composers, among them the most important being Pierre Boulez, Karlheinz Stockhausen, Luigi Dallapiccola, Luigi Nono, Bruno Maderna, and Henry Pousseur.

Under the impulse of various ideas coming from the conception of Oliver Messiaën, they will extend serialism over other perimeters like rhythm, dynamics, and timber. This stage will be called integral serialism.

The starting point of atonalism provoked multiple reactions that materialized in compositional trends which evolved parallel to atonalism.

The first stage, often described as “antifunctional”, is created by Arnold Schönberg, starting from the big dissonance coefficient of late romantic composers. This consists of a strongly dissonant chordic sequence, especially through the use of a chord with 7M, (which would later be appreciated as a chord with diminished octave), without it being obtained through a functional report of dominant tonics. This stage in Schönberg’s creation was later called atonalism in musicology.

In the second stage, A. Schönberg (after a 7 year break) inaugurated a system which he will name dodecaphony (*Zwölftonmusik*), or a series of twelve chromatic sounds (the total chromatic of an octavian scale). A. Schönberg will formulate the elaboration principles of the series, and the work technique of the series; the four forms of the series are: the dodecaphonic basic series, the reversed series, the recurrent and reversed recurrent series, as well as other procedures like: the change of the sounds within the series, the transposition of the series and its versions.

Alban Berg and Anton Webern will join him.

Here is an example of the first dodecaphonic opus by A. Schönberg.

Schönberg - *Quintet for Winds* (series exhibition from section I)

The image displays a musical score for Arnold Schönberg's *Quintet for Winds*, specifically the first series exhibition from section I. The score is arranged for five wind instruments: Flute (Fl), Oboe (Ob), Clarinet (Kl), Horn (Hr), and Bassoon (Fg). It is presented in two systems of staves. The first system covers measures 1 to 4, and the second system covers measures 5 to 7. The music is written in 3/4 time and features a complex, atonal series of notes across the instruments, with various dynamics like *p*, *f*, and *fp* indicated.



(N.B. The integral presentation of a series is shown and its transposition to flute, (like a thematic idea) while the other instruments accomplish series based on melodic lines, but in a different configuration.

Of the two followers of A. Schönberg, the one that will institute a severe technique is Anton Webern, by following the series in verticality, too.

Anton Webern, *Variation for Piano op.27*

Webern: Var. pt. pian, op.27



The restrictions of the dodecachaphonic series also stay valid in the third stage of serialism, but the series can be composed with fewer sounds. That's why this stage is called (in musicology) – **serial** thus justifying the complete naming of this musical trend: **atonalism- dodecachaphonism- serialism**.

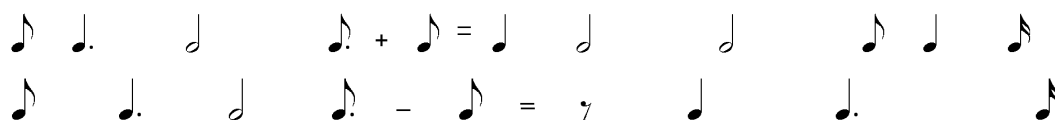
The dissonance coefficient is permanently maintained, but the intonation difficulty coefficient grows.

Here is a musical example which on a visual lecture impresses by permanent jumps in the score of each instrument.

1) A fixed modification of a simple series can be achieved through the augmentation or decrease of the mentioned series, by a geometric progression; for example; from the initial series ♩. ♩. ♩. ♩, if it is augmented three times, it becomes: ♩. ♩. ♩. ♩. ♩. ♩. ♩. ♩, or if it is diminished

three times, it becomes $\overset{3}{\text{♩}}$ ♩ ♩ $\overset{3}{\text{♩}}$.

2) The mobile non-evolving modification can be achieved through the addition or removal of a fixed duration to the duration of the initial series:

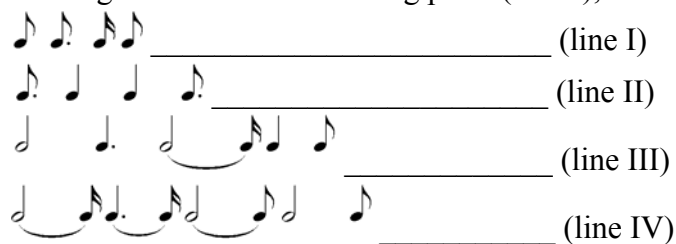


3) The mobile evolving modifications can be achieved through the addition of a time variable to the time of the series. The simplest solution is obtained by automatic scoring of each term of the series.

b. The Complex Series is achieved through complex combinations of proportions based on durations, starting from a numerical expression like this:

2	3	1	2
3	4	5	3
8	6	7	6
9	7	12	10

-Taking a sixteenth as a starting point (1 = ♩), we will have the following times:



Dividing these times from the highest value, we obtain the so-called block of durations with several types of distributions of times: symmetric (regular and irregular), asymmetric and combined.

Example of regular symmetric distribution



If these large blocks of complex overlapping visual and auditory images appear so crowded, that the total is globalized in a sound web.

The music resulting from these methods of composition, requires an enormous effort from the composer, who must constantly calculate the rigorous organization of discourse with these drastic principles of the series (melodic, rhythmic and verticality). In reality, the density of the music turns to noise bands whose details (ordered with such requirements) are lost, the total mass is similar to hearing a sound in a global flow, like a river flow.

2. NEOMODAL TREND

The neomodal trend will be the most important musical trends of the first half of the twentieth century. Also called chromatic modal, it brings together composers with folk cultures of the country of their origin, these cultures being preserved in the twentieth century. These composers include Igor Stravinsky - Russian folklore, Béla Bartók – Hungarian, Romanian, Slovak folklore, Béla Bartók - Czech folklore, George Enescu - Romanian folklore and Karol Szymanowski - Polish folklore. They will develop new techniques of composition through the extraction from these folk cultures of organizing principles inherent to folk songs such as the consonantal principle of symmetry and *sectio aurea*, through which they build their musical ideas and chord structures.

This trend is perhaps the most viable and appropriate development of post-tonal-functional evolution, it associated composing personalities who, not using atonalism, have been "tagged" by Schonberg's idea of repudiation of the tonal-functional system, but have sought (and found) each its own method of composition by combining Western European tradition (tonal-functional) with principles drawn from the essence of folk culture from which they descended.

The man who paved the way was Modest Musorgski, a romantic. Here is a dominant sequence in which the dominant function is removed.

M. Musorgski- Pictures from an Exhibition
Nr.10

I I6 IV3b III VI III VI6VIIb VI VII⁵ VI

IIb III II VI II VI VII IV V3b IV6 I

(N.B. We note the use of second step chords, as well as the diminishing of other chords to diminish their role).



Here is an example of the use of the λ chord in *Sonata for Two Pianos and Percussion* a real sequence of clusters.



Equally, the chords presented by O. Messiaën as being characteristic of his style, each forms a conglomeration very close to clusters.

For example this sequence (cadence) from mode III.



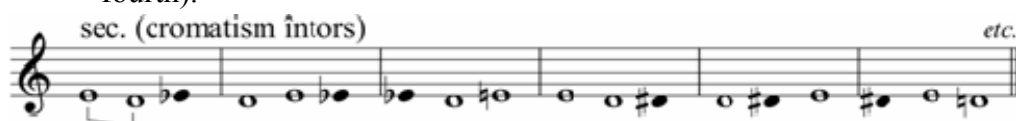
Moreover, the process of stocking chords with added notes, is already being used by impressionists. (Cl. Debussy and M. Ravel).

So, the cluster used by aleatoricism on a large scale has its roots in the concept of the agglomeration of a chord by which it loses its functional character, turning into a conglomeration of sounds in which the elements from which the chord is formed are no longer perceived, but rather become global. As we see in the neomodal composers' creation this agglomeration arises from various processes used by them.

In the chromatic thinking of neomodal composers, it combines total functional chromatic with the chromatic obtained from the diatonic chromatic principles.

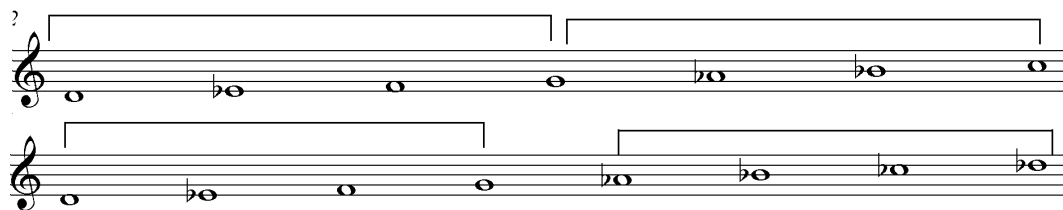
Here are some principles of this chromatism:

- the formation of melodic units (motivic cells or motives) by the chromatic circulation of a sound inside the interval, pentatonic and oligochordic formations (these intervals being of a major second, minor third and perfect fourth).





- the association of two or more modal units in conjunction or disjunction



- diatonic and chromatic evolution based on a fixed pole of departure and return (modes with the same end)



- melodic and harmonic formations with sectio aurea intervals or with symmetry



Bartók: "Microcosmos", 109



- bi-modal and pluri-modal overlappings

B. Bartók – *Mikrokosmosz III – Dur und moll*



(N.B. The discant melody is on the fifth of the f Dorian-Aeolian mode and the melody of the base is on the fifth of the f Lydian one)

Heterophony represents for the neo-modal trend a technique which will lead to large agglomerated sounds, similar to later aleatoric trends.

Heterophony is born from primitive musical culture in the form of multiple voices, in which a melody is sung together with its variations (the vocal group, the instrumental group, and the vocal instrument group).

Here is a product of heterophony in a situation where the sung melody is accompanied by the same melody played by the pipe, with ornaments.

Rubato

Fluier

2

Fluier

Voce

Dra - gă a mea mă - mu - ți dra - gă

3

Fluier

Voce

Dra - ga mea mă - mu - ți dra - gă

4

Fluier

Voce

Zi ua ai gră - it cu mi ne Zi ua ai gră it cu mi ne

In the 20th century heterophonic techniques become a conscious way of composition, so through the overlapping of 2-3-4 versions the dilated melody is perceived.

Poco adagio
mp

V. Herman: "Paleomusica", II

S.

A.

T.

B.

si să nu o- presti pe ni menī sã nu grã-ias cã

si să nu o- presti pe ni menī sã nu grã-ias cã

si nu o- presti pe ni menī sã nu grã-ias cã

si să nu o- presti pe ni menī sã nu grã-ias cã



Of course, heterophony implied chromaticism just as freely.

A melody and harmony resulted from working with these chromatic principles, often resembling the chromaticism of the atonalists (some musicologists – V. Herman – talking about pre-serial phases), the result of the creations of these composers being close to that of the atonalists. An auditive comparison can be made between sonorities from *The Miraculous Mandarin* by B. Bartók, with the sonorities from *Lulu* by A. Berg.

Such comparisons can be made between *The Chamber Symphony* by G. Enescu and chamber pieces by A. Schönberg.

As of I. Stravinski, it is known that in his works *Threni: id est Lamentationes Jeremiae propetae*, written for soloists, choir, and orchestra, and *Agon* (ballet for 12 dancers) he had already adopted serialism.

Actually, in the case of the neomodualists also, the complexity of the musical speech leans toward an agglomeration that leads to globalization, and this leads to aleatorism.

If we also discuss the other parameter, rhythm, we can easily find that neomodualists started the process of overcoming the rhythm of tonal-functional music earlier than atonalists.

So, what A. Schönberg did in the field of the tonal system, I. Stravinski did in the rhythmic field by *Sacre du printemps*, where he used rhythmic principles of certain systems (especially giusto-sylabic and aksak) that tonal-functional metric music did not include due to their origin from Renaissance polyphony and dance music of Western Europe, metrically organized.

Of course, I. Stravinski wasn't aware of the principles of these systems (like we are today), but the Russian folklore induced them and his intuition has put them to good use.

Likewise, G. Enescu introduced and massively exploited the rubato rhythm category, taken from the "doina" style of the Romanian folklore.

This is why we believe that this trend (neomodual) represented the natural evolution from the tonal-functional music towards a new music of the 20th century, without producing such a radical break as that of Schönberg.

We can anticipate the natural course that Romanian music will follow throughout the 20th century.

3. NEOTONAL TREND

The neotonal trend will be the third musical trend, created by composers that extend the functionalism principle with processes called “extended tonality”, in fact, the major-minor synthesis (C Major – C minor like synthetic tonality), overlapping functions, overlapping tonality etc.

This trend included the following composers: Paul Hindemith, Arthur Honegger, and other French composers like Francis Poulenc, Darius Milhaud, Jacques Ibert, André Jolivet, and others, developing like a natural continuation of Claude Debussy’s and Maurice Ravel’s music, but attached to a formal conception of the classic spirit, consequently called neoclassical composers.

The development proposed by these composers for the tonal-functional romantic system is first of all the major-minor synthesis of homonymous tonalities, obtaining a large coefficient of chromaticism, formed from the alteration of the two tonalities, from which chords with diminished octaves or augmented octaves result.

Here is a synthetic chord of stage I with a seventh in C Major + c minor:



(N.B. e and b belong to the first stage of C Major, but e flat and b flat represent the third, respectively the seventh from c minor).

The best example of this technique is *Ludus tonalis* by P. Hindemith. This piece represents “a well-tempered harpsichord”, but instead of 24 preludes and fugues, corresponding to the 24 tonalities used by J.S. Bach, these are reduced by P. Hindemith to 12 synthetic major-minor tonalities.

The most advanced technique of these composers is the overlapping of tonalities in two, three, or four layers. It goes without saying that if two chords overlap, for example, over the tonic chord in C Major, tonic chord in D flat Major, a harmonic structure that in fact cancels the auditory perception of the tonic, is achieved. It is thus a way tonal-functional system functions are canceled.

It was with such a harmony that A. Honegger composed his piece *Pacific 231*, in which the musical discourse imitates the sound of a running locomotive, this sound being achieved by the succession such chords. It is an effect that, in the absence of a visual score, can be easily produced with aleatoric techniques (for example with cluster chords).

4. BRUITISM- CONCRETE MUSIC- ELECTRONIC MUSIC

The fourth trend begins from a totally different necessity than tonality and that is the timbral crisis, produced by the timbral exhaustion of the romantic orchestra.

It is inappropriate to call it a trend, because in fact it is a chain of filiations started in 1918 by a group of young Italians led by Luigi Russolo and Francisco Balilla Pratella, who organized a concert in Milan with an “orchestra” which produced only noise. Pratella ha already published in 1911 the *Manifesto of Futurist Musicians* where he said the following:

“We get more pleasure from the idealistic combination of the noise of trams, cars, carriages, and the noisy crowd, than to listen to, for instance the Heroic or the Pastoral...” ... “The art of noises will derive its emotional capacity primarily from the special acoustic pleasure, obtained by the inspiration of the artist by combining noises...”

As we shall see, this manifesto will introduce noise in 20th century music, by using percussion instruments and other instruments able to produce noise (for example wind machine, etc.).

The sequence of the names in this subtitle represents in fact the succession in the evolution of a musical process produced throughout the 20th century.

With this issue the orchestral problem is opened (with a span of 300 years from Jean Baptiste Lully to Richard Wagner and Richard Strauss), which used complex timbres of those instruments.

The first reaction regarding the limitations of this orchestra is that of the Italian futurists, whose intuition was the necessity of a larger orchestra with noise producing instruments.

This idea was taken in the 1930's (fourth decade) by Edgar Varèse, who composed works exclusively for percussion instruments (for example *Ionisation*), hence the noises.

to Nicolas Slonimsky
IONISATION
(for Percussion Ensemble of 13 Players) Edgard Varèse

♩ = 69

(N.B. Note that E. Varèse uses in this work only noise instruments (or with undefined sounds). Even the piano will be used as a percussion instrument, its chords being perceived as such).

The opening made by Varèse will mean a gateway for what will be called electronic music.

ELECTRONIC MUSIC

Already from the fourth decade concerns arise for the development of tools to produce electronic sounds (the Martenot waves) and recently (1950), with the invention of the tape recorder, Pierre Schaeffer from the French Broadcasting Society, together with a group of collaborators including E. Varèse, O. Messiaën, P. Boulez, initiated the so-called “concrete music” based on collages made up of segments of the tape, obtained by the acceleration or deceleration of the magnetic tape of the tape recorder and then cutting and reassembling.

The 6th decade came also with large discoveries in the field of the sound generators with a multitude of timbres.

These findings become a chance for the creation of new timbres that will extend to those of the orchestra, or even more so, to offer a unimaginably rich kaleidoscope.

Electronic music will also serve the aleatoric techniques.

In the end of the screening of these aleatoric "preliminaries" we must formulate some considerations.

5. CONCLUSIONS

Like other arts (poetry, painting, sculpture etc.) music made a great leap in the 20th century, even from its first years. From our perspective, today we observe that, in fact, the evolution of music has two stages: the first one lasting approximately 6 decades (~ until the 1960's) and the second one covering the next half of the century and continuing to this day.

By observing the two stages, we can express the fact that the first stage launched like a real explosion, generating the trends reviewed by us (leaving out the traditionalists who have written in the tonal-functional system during the 20th century like R. Strauss, C. Saint-Saëns, G. Fauré etc.), apparently divergent and sometimes opposing currents (it is well known the dispute between I. Stravinsky and the serialists), although in reality, regardless of path, the they had similar results.

Moreover, the atonal trend along with the neomodality and neotonal ones, reach certain common aspects such as the neoctavian aspect, major-minor synthesis, reverse chromatic formulas, agglomerated chord structures etc., ultimately, all aiming toward a complexity where detail is lost, the musical discourse becomes global, just as "*one could hear rain on a tin roof*" (I. Xenakis).

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This work was supported by CNCSIS-UEFISCU, project number PNII-IDEI Code 718/2008 named Exploring the adaptation of on-line learning means to music education.

Manuscript received: 10.06.2010

Accepted paper: 12.08.2010

Published online: 16.08.2010