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(RECOMMENDED CITATION)

TEXTURALISM[1]

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SUMMARY. Although identifying and defining texture as a specific sound organization in sound mass compositions[3] comes about frequently in contemporary musicology, only a handful of researchers regard this as a tendency of what turns out to be a large number of composers towards an aesthetic with underlying principles of composition. A delimitation of a notion that includes such a diversity of compositional methods into a stylistic unity still tapped into by composers is achieved by analysing some particular characteristics of a few textural pieces and other attributes that are common to various other pieces. The suggested theory of texturalism thus systemizes an important part of the 20th century music in which compositional techniques of other style defining musical practices are grouped together with singular technical features.

Keywords: texturalism, texture, sound mass, Varèse, Xenakis, Ligeti

The elaboration of a terminology specific to the sound phenomena is achieved, especially in case of yet unorganized tendencies in music, either by taking into consideration certain correspondences with extra musical elements or by taking into account technical peculiarities of the musical language. Even though subsequently to the first musical manifestations derived or associated with extra musical elements the prevailing technical characteristics can be determined, their degree of generalization always exceeds the specificity of the terms originated directly from the technical level.

Thus there is a need of restricting the semantic meaning of the notions with an extensive nature to their inherent technical aspects and

[1] This paper is a further elaboration of the theory presented in the dissertation *Origins, evolutions and contemporary examples of texturalism*, coordinated by lect.dr. Cristian Bence-Muk within the master's degree program of the „Gheorghe Dima" Music Academy, Cluj-Napoca.

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[3] thus narrowing its semantic meaning from one that encompasses the quality of all possible combinations of musical elements to that of a singular type of structure. Texture and textural, its lexical derivative, will share this meaning throughout the paper.

also of generalizing compositional techniques towards the same common ground. Also, as long as the conventional musical language is being used, and not technology as the language of electronic music, the various compositional and notational methods need completion so that they can determine a musical discourse that is particular to texturalism.

Defining texture as a sound organization in which the sounds and the relations between them lose their heterogeneous identity into an unitary structure entails the theoretical and analytical elaboration of some occurrences found both in the first materializations and in the later stages of cognizance. Analysing these occurrences is what substantiates the consideration that texturalism is a clearly defined system with specific compositional methods and organizational patterns.

The scientific dissociation of music into its primary components frames the premise of conceiving music as a combination of its constituent elements into monody, homophony, polyphony or heterophony[4]. To this combinatorial process the composer Horaţiu Rădulescu (1942-2008) opposes the phenomenon that is particular to the 20th century in which the spectral components of sound determine the structuring of different sound organizations. The same combination of elements into structures can be found even here, but the formative level, the frequencies and the pulsatory rhythms are all derived from spectral analysis and amplify a musical form with identical features. The compositional methods that are typical to spectral resynthesis and the resulting *sound beings* stem from the textural compositions of Iannis Xenakis (1922-2001) and György Ligeti (1923-2006). Even though these compositions are not based on spectral analysis and resynthesis, the fluctuation of higher overtones can be perceived as epiphenomena or auricular overtones (created by differential tones[5]). Rădulescu points out that in compositions like *Atmosphères* (1961) by Ligeti or *Stimmung* (1968) by Karlheinz Stockhausen (1928-2007), the intrinsic discontinuity of the conventional combination of the elements that are the base of the musical language is replaced by the continuity that is specific to some new sound manifestations[6]. But *Atmosphères* and *Stimmung* differ almost completely.

Besides the gradual rhythmic subtractions, the mosaication of various rhythmic entries or the dynamic variation of clusters or prolonged

[4] „for millennia we made music treating the sound from its outside, i.e. combining sounds more or less into monody, homophony, polyphony and heterophony" – Rădulescu, Horaţiu, *Sound Plasma: Music of the Future Sign or My D High opus 19* ∞, Edition Modern, München, 1975.

[5] Urmă, Dem, *Acustică şi muzică (Acoustics and Music)*, Editura Ştiiţifică şi Enciclopedică, Bucureşti, 1982, p. 218.

[6] Rădulescu, Horaţiu, op. cit..

notes, the primary compositional method used in *Atmosphères* is the polyphonic gradation that is imperceptible in detail, called micropolyphony, which by hyperbolising both the disparity between the rhythmic variations of some short melodic imitations and the constant alternation of thirds and seconds at the cellular level of each individual voice offers textural consistency to an instrumental musical discourse whose temporality derives from internal fluctuations that are sustained by perceptible external limits. Rădulescu uses Ligeti's method of creating macrostructures by processing formative elements in conjunction with different untempered tunings that are specific to spectral music[7].

Unlike *Atmosphères*, *Stimmung* is composed for six vocalists who sing only the first harmonics of an imagined fundamental frequency. The form of the piece is not defined. The score consists of 51 sections that actually are simple phonetic rhythmic models called „moments". These rhythmic models must be applied to a sequence of frequencies that represents the scheme of the form. The performers follow a few rules that regard the rhythmical model's number of repetitions but more importantly they have to modify the tempo and the actual rhythm of the models so that they can synchronise with the ensemble.

The influence of a music that is based on natural harmonics together with some of the compositional methods found in *Atmosphères* foreshadow the musical language of spectralism. But even though in *Stimmung* the timbre variation predominates over the perception of pitch and the rhythmic models are not overall synchronised, the musical discourse is not textural because it is determined by still perceptible correlations between the sound frequencies. In spectral compositions like *Partiels* (1975) by Gérard Grisey (1946-1998), different combinations of instruments and the variation of rhythmic entries or voice endings that configure the sound web synthesize compact textural forms that cannot be perceptively deconstructed into their constituent elements (Ex. 1).

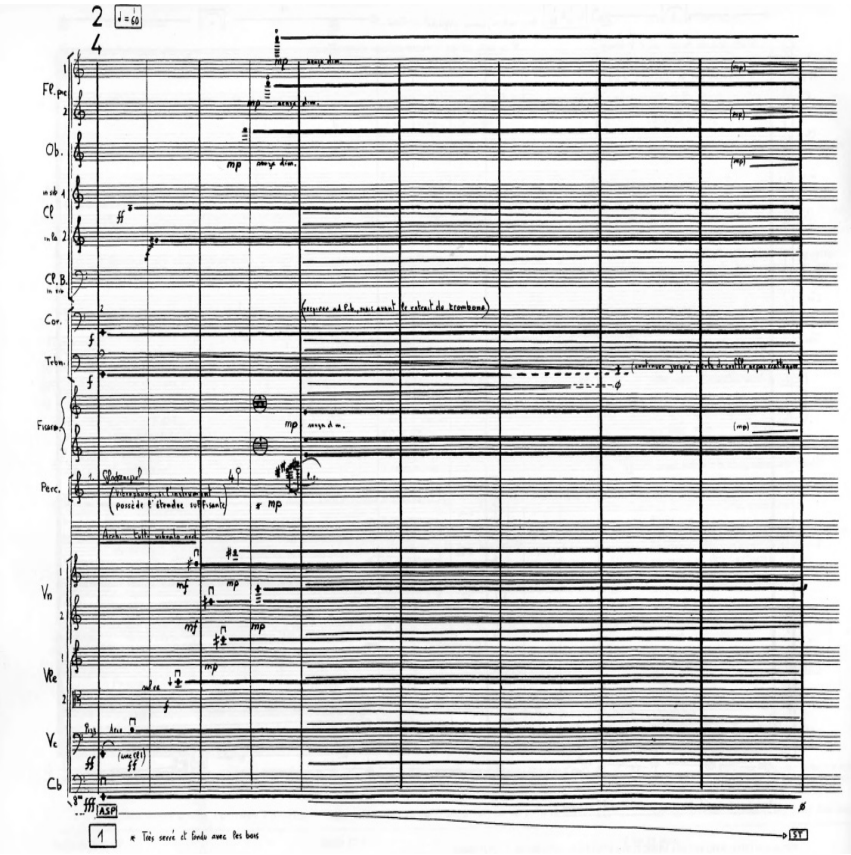
The open (moment) forms found in Stockhausen, realized by more or less freely arranging detachable sections, are not typical to texturalism's structuring, but when these sections' stratification is achieved without seeking a rhythmical synchronisation of the ensemble and the slow amalgamation of a large number of voices dilutes the musical discourse, even minimal compositions like *In C* (1964) by Terry Riley (b. 1935) attain textural status.

The process of formal homogenization of the compositions into continuous structures is also present in the work and writings of Xenakis.

[7] des filtres micro-formels se déplacent pour décrire la trajectoire registrale macro-formelle" – Rădulescu, Horaţiu, *Musique De Mes Univers*, *Silences 1*, 1985, p. 50-56.

He distinguishes as texture's structuring guidelines the two divergent perspectives that are applicable to any reasoning on the nature of existence: from specific to general and vice versa. Thus, on the one hand we have the possibility of iterating and superposing elementary formative units, and on the other we have the concept of a macrostructure that materializes through a reduction towards its constituent elements[8].

Ex. 1



Gérard Grisey – *Partiels* (1975), page 2

Although in the context of tonal music form is like an often preconceived mould into which the musical content is poured, the essence of this music consists in processing the detail in such a way that the melodic, rhythmic and harmonic variations are perceptible. Even polyphonic

[8] Xenakis, Iannis, *Formalized Music, Thought and Mathematics in Composition*, Indiana University Press, Bloomington, 1972, p. 246.

forms are constructed through an elaboration of their detail, but most of them, especially in the Renaissance, do not follow a preset formal pattern. The superimposition of more than two polyphonic voices is generally reduced perceptively to homophonic structures by combining similar voices. This is true not only with regard to sound perception, but also as a technical aspect of counterpoint, and that is because the polyphonic structures of tonal and modal music are directed by the vertical harmony. When rhythm and the melodic intervals lose their functional significance in complex structures, the correlations between harmonic intervals take over as the coordinating elements of the musical discourse. Tertian harmonic chords and other verticalized harmonic formations in which the relations between sounds persist perceptively do not allow the sound manifestations to become textures, especially when they are subordinated to a temporal harmonic hierarchy, but when instead there is a tendency towards the full verticalized chromatic scale, the various components are not functionally differentiated and for most of the times the horizontal moments lose their identity into a temporal flow. But when chords of chromatic conglomerates appear within the context of tonal hamony they are usually related to the neighbouring chords with defined functions. One such conglomerate that functions as a dominant chord can be found in the first movement of Gustav Mahler's (1860-1911) *Tenth Symphony* (1910)[9] (Ex. 2).

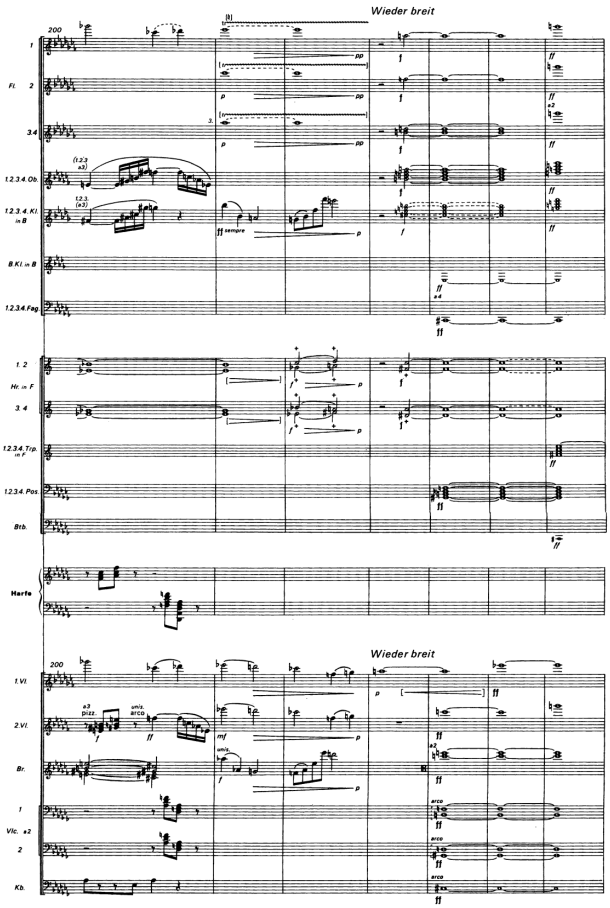
The first violins' A natural in measure 203 separates a distinct aggregative structure from the clear tonal discourse that preceded. The same A natural, played by the trumpets, appears in measure 206 and is left solo in the next bar only to be reintegrated in measure 208 into an identical chord that concludes the structure. Although there can be found functional equivalences for each note as added dissonances to a dominant chord, the accumulation that can be traced from a single pitch to formations of five, then seven and finally nine different pitches loses its tonal function to the perception of a dissonant homogenous agglomeration, especially considering that the nine pitches are distributed between instruments with individual timbres that cover many registers.

It can be concluded that the components of the musical discourse are invested with syntactic functions that depend on the structural context that they are part of. Although in the Renaissance period composers like Luca Marenzio (cca. 1553-1599) or Carlo Gesualdo (1566-1613) used all twelve notes of the chromatic scale within a single polyphonic progression, they chromatically altered the melodic lines following the principle of

[9] Although the sketches of the symphony were practically finished at the time of Mahler's death, only the first movement, *Adagio*, is considered to be fully elaborated and scored by the composer.

polyphonic consonance. The same principle facilitates the realization of some monumental Renaissance compositions in which, despite the impressive number of distinct voices, the effect of an harmonic progression becomes means of articulation and a mark of perception, even if the variation in sound density overshadows this effect. In the pre-tonal music literature there can be found many compositions that adhere to the rules of strict counterpoint but which, because of the great number of polyphonic imitations, become non-textural sound masses. These sound masses can be conceived by maintaining the same harmony on the same modal degrees for extended periods of time. The structural melodic nodes will therefore sustain different scale degrees and thus the polyphonic density can be thickened without negating the rules of counterpoint.

Ex. 2



Gustav Mahler – *Symphony No. 10*, *I. Andante*, m. 200-206

Some of the most suggestive such compositions are: *Deo Gratia*, a canon for 36 voices that is attributed to Johannes Ockeghem (1410/1425-1497), in which the unique form of the work is determined by the continuous flow of polyphony; the immense motet for five choruses of eight voices each, *Ecce beatam lucem*, composed by Alessandro Striggio (1536/1537-1592), where stretto imitations are pulverized on every beat; *Spem in alium nunquam habui* for 40 voices, composed by Thomas Tallis (cca.1505-1585), characterized by antiphonies, emergences of isorhythmic blocks and spatial explorations of the music through the distribution of sound between the different voices of a specially positioned choir.

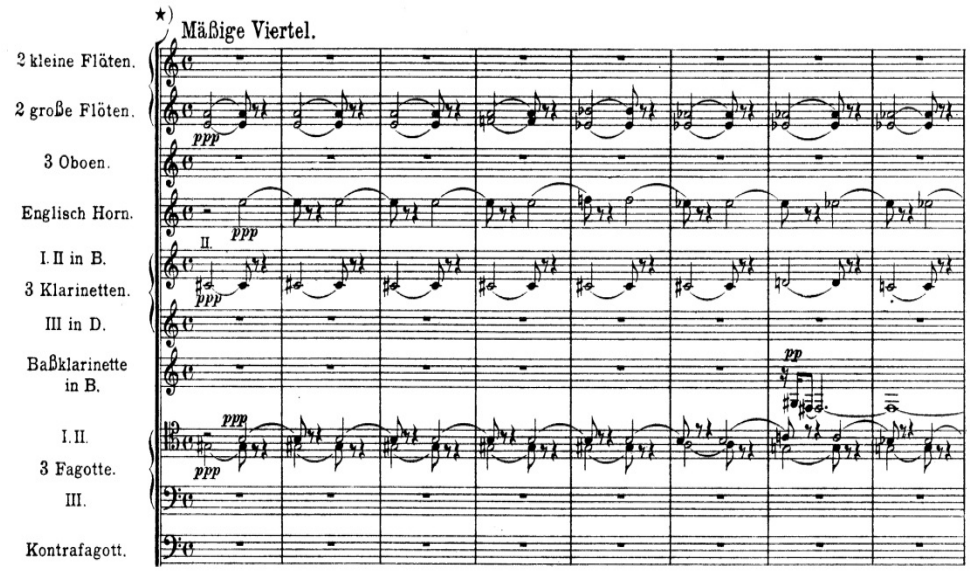
When the function of harmony in composition is suppressed, together with that of the interval, rhythm and other relations which can be established at a detailed level between the various elements of the musical language, new specifically textural structures will become the formative elements that articulate the temporal unfolding through superpositions, juxtapositions or transformations of different sound objects. Generative units such as the musical interval or rhythm, which are the indelible cornerstones of any assertion through sound, are morphologically reduced to simple elements within these complex structures that now gain syntactic functions. The sound parameter's properties are masked and generalized at the sound mass level. Pitch is perceived not as an individual characteristic of each sound, but as a frequency band, and duration delimits segments of the sound mass or becomes a pulsation of it. Intensity also becomes a global characteristic but its function of dynamic articulation is emphasized because of a proportional decrease in importance of pitch and rhythm.

From a particular aspect that denotes the quality of musical sounds that allows the differentiation between sound sources, timbre becomes a spectral synthesis of the vibrations and temporality that are characteristic to each constituent sound of a musical manifestation. Timbre is conventionally determined by the number and intensity of overtones, the pitch and intensity of the actual sound and the transient processes like the attack and decay time or the dynamic variation of a sustained tone. While spectralism is an instrumental amplification of such features with its compositional methods derived from them, texturalism shares its perceived outcome but subsumes more complex and varied structuring methods. The analogy between these features and certain aspects of texturalism can be nevertheless identified. The number and intensity of individual voices in a composition substitutes the number and intensity of overtones, the frequency band of each sound object and its intensity replace the pitch and

the intensity of a single sound and the compositional and structural methods become the equivalent of the transient processes.

These metonymical correspondences are various facets of an homogenization of the musical space that together with the attempt to surpass the functional irreversibility and invertibility of tonal music constitute the premises of textural music. The emancipation of dissonance predicted by Arnold Schönberg (1874-1951) in his *Harmonielehre* is founded on such an attempt and on the vision that the horizontal and vertical dimensions of music can share equivalent functions. Before publishing his harmony treatise in 1911, Schönberg already assigned the role of temporal variation to timbre by using the timbre (sound-color) melody[10]. In the third piece of *Fünf Orchesterstücke* Op. 16 (1909), Schönberg minimizes the melodic, rhythmic and harmonic progression so that the timbral qualities of various combinations of instruments can be highlighted. Different groups of instruments will thus play the notes of some gradually changing chords in a sequence linked by superpositions controled by varied or constant dynamics.

Ex. 3

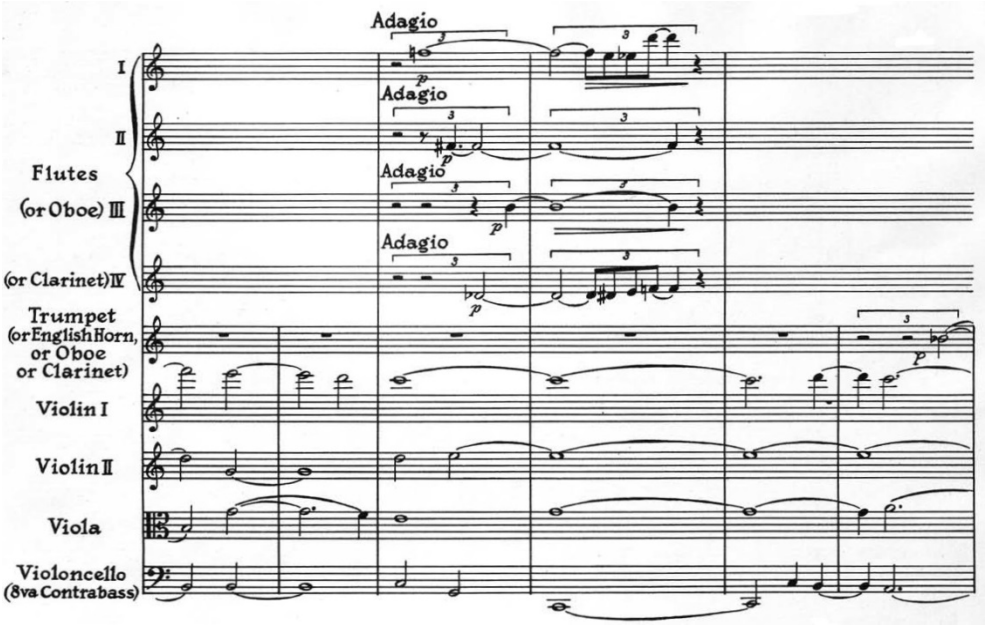


Arnold Schönberg – *Fünf Orchesterstücke*, Op. 16, III. *Farben, the beginning*

[10] which he later called *Klangfarbenmelodie* in the same treatise. The physicist and physiologist Hermann von Helmholtz (1821-1894) created the term *Klangfarbe* (sound-color) besides the already existing *Metalklang* (general timbre) and *Metallstimme* (voice timbre) – Urmă, Dem., op. cit., p. 242.

The premises of texturalism can also be found in the increase in complexity of functional tonality or in the excessive division into separate voices that are specific to the end of the 19th century[11] and later in the use of polytonality, polymodality and polyrhythmy. In compositions such as *The unanswered question* (1906) by Charles Ives (1874-1954), the atonal stratum that contrasts with the consonant choral played by the strings is built through successive entries of the voices on fractions of the beat so that the discordance of an incipient polytonality is accentuated by the waning of the metrical pulsation.

Ex. 4



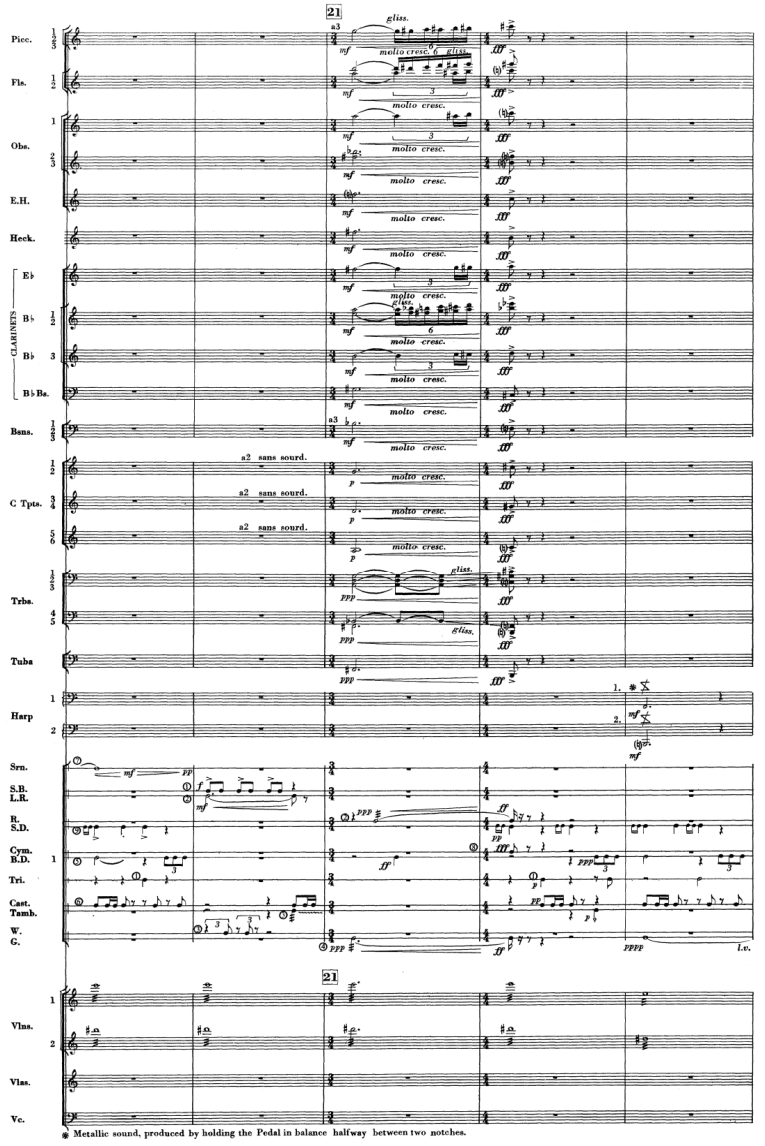
Charles Ives – *The unanswered question*, page 5

Starting with Edgard Varèse (1883-1965), this method of eschewing the metrical sense becomes a typical device in the structuring of harmonically functionless sound blocks that have an autonomous quality and which the ear cannot analyse as distinct superpositions of sounds[12]. These sort of sound blocks, which are the seed of texturalism[13], can be

[11] Voiculescu, Dan, *Polifonia secolului XX (20th century polyphony)*, Editura Muzicală, Bucureşti, 2005, p. 137.
[12] Niculescu, Ştefan, *Reflecţii despre muzică (Thoughts on music)*, Editura Muzicală, Bucureşti, 1980, p. 224.
[13] ibid, p. 238.

traced back to Varèse's first stylistically mature composition, *Amériques* (1918-1921) (Ex. 5), in which the compositional methods of his later works can be foreseen: the dynamic variation of sustained chords or notes, the gradual accumulation of various instruments into a sound fabric as means of timbral variation on pedal points, the saturation of pivotal sounds or the development of melodic lines through internal repetitions.

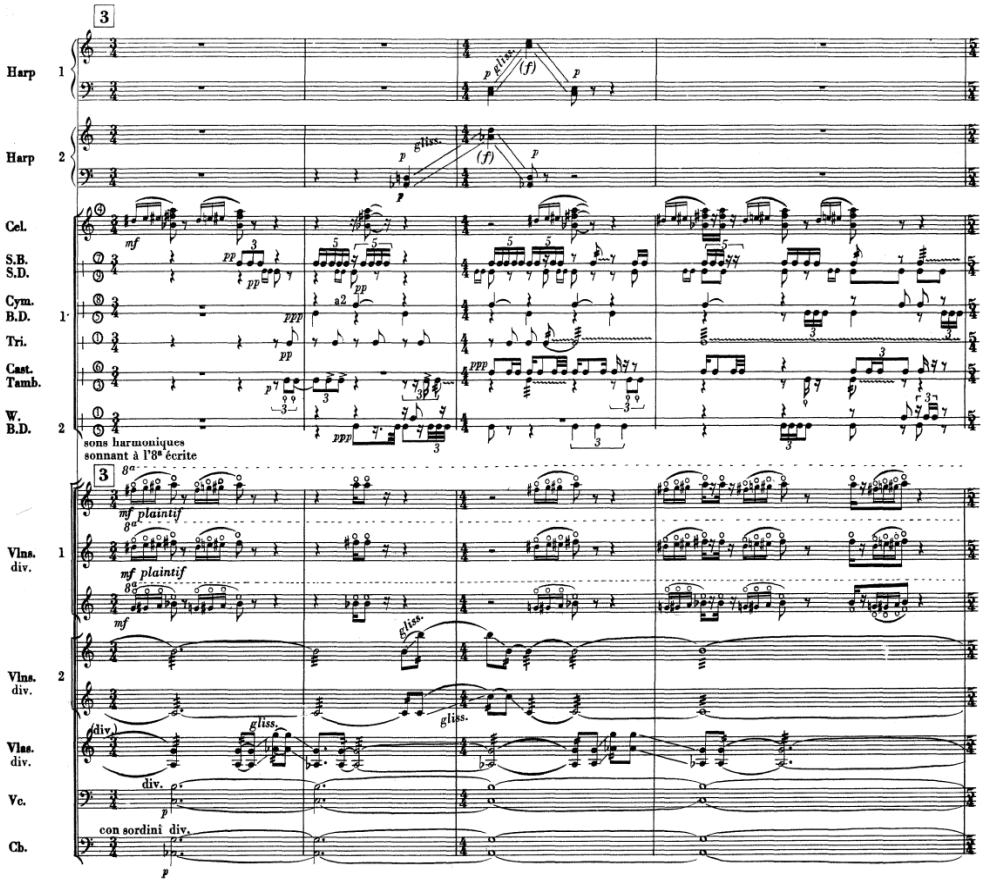
Ex. 5



Edgard Varèse - *Amériques*, figure 21

The complex webbing of the percussion instruments becomes a stylistic element of the varèsian musical language that in some cases, together with other instruments, forms discontinuous moments without any harmonic, melodic, and because of the agglomeration, not even rhythmical sense (Ex. 6). These tonal discontinuities are substantiations towards the creation of what Rădulescu identified as the new and continuous sound manifestations of the 20th century.

Ex. 6



Edgard Varèse - *Amériques*, figure 3

Varèse's technique of transforming a complex and compact sound block into another through a new grouping of its constituent elements[14] is

[14] called „the transmutation technique" – Iliuţ, Vasile, *De la Wagner la contemporani, Volumul V, Culturi muzicale naţionale eterogene în secolul XX (From Wagner to contemporaries, Volume V, Heterogeneous national musical cultures in the 20th century)*, Editura Universităţii naţionale de muzică, Bucureşti, 2001, p. 75.

the outcome of his consideration that music is an objective space centered on sounds and not on melody or harmony. However, these sounds are not singularities, but an heterogeneous part of a mobile sound mass that varies in radiance, density and volume[15].

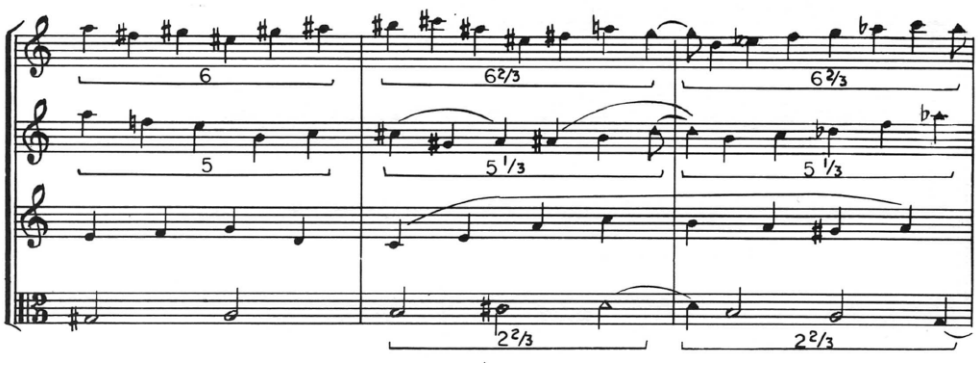
Beginning with the appearance of the first textures, one of the elements that becomes a compositional principle, advanced through a variety of diversification methods, is the cluster. The cluster will be brought to the forefront as a structural element starting with the works of Joseph Humfrey Anger (1862-1913), Leo Ornstein (1893-2002) and Charles Ives, yet Henry Cowell (1897-1965) will be the one to exploit, theorize and popularize it as a formative unit. The intertwinement of the cluster with glissandos will outline the concept of movement in sound mass compositions. The derivation of some new sonorities through the use of polyphonic clusters led to the concept of mobile clusters and thereafter, in Stockhausen's works, to certain methods of variation like the perforation of the sound fabric with rests.

Preceding the tendency to spectrally synthesize continuous structures is Cowell's attempt to compose two atonal quartets in which the durations of the sounds are derived from the proportions found between the first harmonics. In his book, *New Musical Resources*, Cowell published the ideea that harmony and rhythm can be interdependent because these proportions can be guidelines in the composition of rhythm[16]. Cowell's method consists in correlating the fundamental frequency of a specific sound with a whole note and every successive harmonic that follows with an equally proportional duration. When changing the fundamental he calculated the proportions between its harmonics and the last fundamental, thus obtaining fractions that require special notations like the triangular or square note heads for the partition of the duration in various ratios.

[15] „taking the place of the old fixed linear counterpoint, you will find in my works the movement of masses, varying in radiance, and of different densities and volumes. When these masses come into collision, the phenomena of penetration or repulsion will result. Certain transmutations taking place on one plane, by projecting themselves on other planes which move at different speeds and are placed at different angles, should create the impression of prismatic aural (auditory) deformations." – Ouellette, Fernand, *Edgard Varèse: A Musical Biography*, trans. D. Coltman (London, 1973), 178, quoted in Whittall, Arnold, *Musical Composition in the Twentieth Century*, Oxford University Press, 2010, p. 269.

[16] Ross, Alex, The rest is noise: Listening to the twentieth century, Picador, New York, 2008, p. 360.

Ex. 7

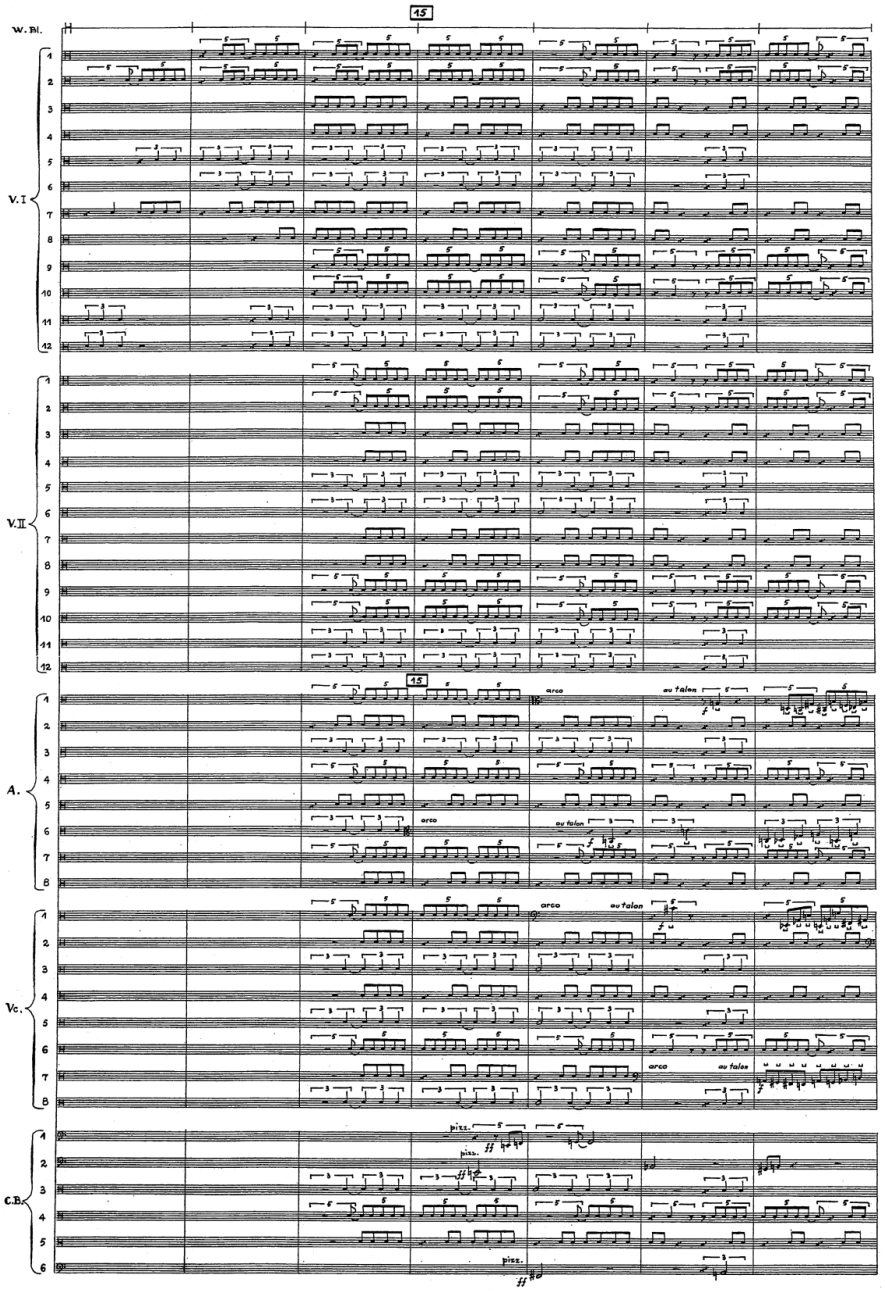


Henry Cowell – *Quartet Romantic* (1915-1917), m. 4-6

While many of the structuring methods of texturalism were elaborated gradually and afterwards generalized and appropriated as means of creating „vast ensembles of sound events"[17], some composers, noticing the impossibility to actually perceive any detail in serial music, developed genuine-textural musical languages. Xenakis resorted to specific compositional methods derived from the introduction of certain mathematical functions[18]. Most of the xenakian formalizations result in textures and even if the musical discourse is the outcome of a logical process of structural elaboration and therefore the relations between sounds are predetermined, the in-time perception of these relations is virtually impossible. The various formalizations implemented by Xenakis in his compositions starting with *Pithoprakta* (1955-1956) emphasize different aspects of the notation, extended instrumental techniques and new musical architectures. Already in *Pithoprakta* we come across the intertwinement of glissandos with pizzicati, staccati or percussive sounds, and the different sound blocks combine or succeed with or without pause into a continuous metamorphosis. A wood block articulates the textures in *Pithoprakta* through signals and, together with the xylophone and the two trombones, adds colour to the music. The opening of the piece, where the strings play quavers, triplets and quintuplets on the body of the instrument, forms a special texture in which the rhythmic agglomeration and stratification is highlighted as a structuring method. A new texture with determinable sound pitches and familiar timbral characteristics germinates in measure 16 underlining the continuous process of sound metamorphosis (Ex. 8).

[17] Xenakis, Iannis, *Muzica – Arhitectura (Music – Architecture)*, Editura Muzicală, Bucureşti, 1984, p. 36.
[18] ibid, p. 135.

Ex. 8



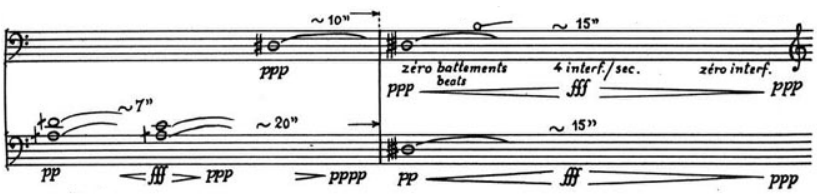
Iannis Xenakis – *Pithoprakta*, m. 13-19

Even though texturalism implies some characteristics as massiveness, mainly because the compositions that initiated this tendency are all, like *Pithoprakta*, composed for a great number of distinct voices, and even if the denomination of its sound organizations as textures was a result of the comparison with the density of the written score, the textural structures in which the sounds and the relations between them lose their heterogeneous identity can nevertheless be smaller in dimensions. While sound mass will keep its meaning, associated with an agglomeration of voices, texturalism, and in its context texture as well, will denominate sound manifestations with clearly defined particularities. The small sound organizations in which the processing of the detail cannot be perceived represent rarefied states of texturalism.

The importance of the imperceptibility of detail in the textural stratification is underlined in any theorization dedicated to texturalism but more than often the only method of composition associated to its definition is the agglomeration, argumented by the similarity with the massive character of the most representative compositions. The agglomerations and hyperbolisations permit the textural processing of some sound manifestations that are reducible to compositional methods which, in other circumstances, are not specifically textural. However, the rarefied structures of texturalism do not imply the agglomeration and have, as formative means, other technical procedures.

Even though the extension of the spectral quality of sounds through the instrumentality of the new playing techniques, so that the resulting sonorities gravitate towards the manifestation field of noise, can be seen as an analogy between noise and texture, which is reinforced by the similarly high complexities of their spectral components, this analogy requires an appropriate elaboration of the compositional plan in order for it to determine textures. In *Charisma* (1971) for clarinet and cello, Xenakis configures a microtonal discourse with sound effects that are the result of extended instrumental techniques and acoustic phenomena like the beats that occur when two sounds of slightly different frequencies interfere[19] (Ex. 9).

Ex. 9



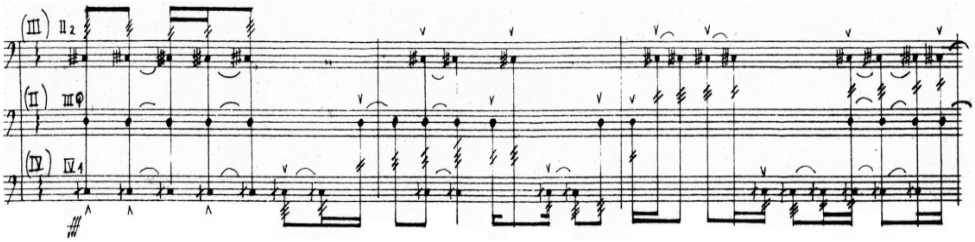
Iannis Xenakis – *Charisma*, page 2, third system

[19] Urmă, Dem., op. cit., p. 39.

Although in most of the moments of the piece the detail is irrelevant, the form and the compositional plan are not particularly textural.

In the same author's *Nomos alpha* (1965-1966) for cello solo, even if the musical discourse is the outcome of certain formalizations through which permutations of some sound complexes that were devised as collections of heterogeneous elements will determine the piece's macrostructure[20], and although the sound effects and microtonal stratifications on different strings of the instrument constitute similarities with texturalism (Ex. 10), the temporal unfolding of the compositional plan is not meant to be an homogeneous structure with textural characteristics.

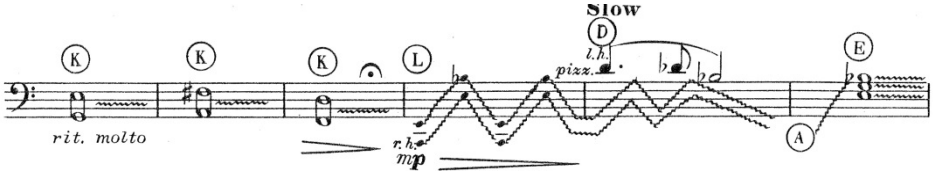
Ex. 10



Iannis Xenakis – ***Nomos Alpha, page 2, fourth system***

While presenting a continuous sound manifestation, for the most part formed through accumulations of resonances, *The Banshee* (1925) by Henry Cowell, composed to be played only on the strings of the piano, does not have a vertical sound organization as a basis and argument of its continuity.

Ex. 11

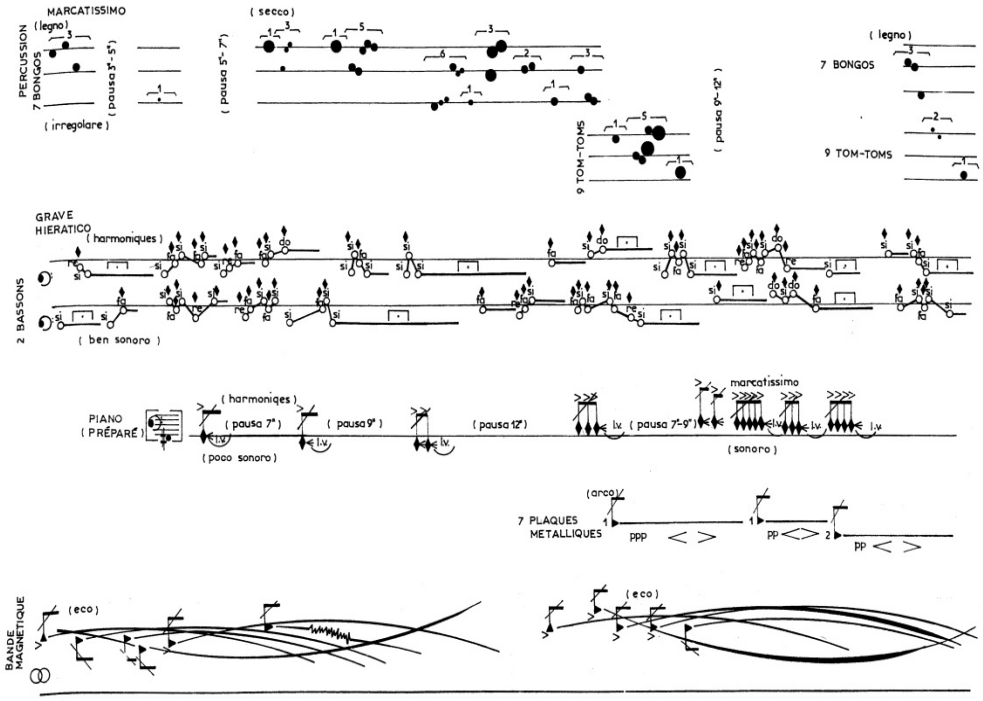


Henry Cowell – ***The Banshee*****, penultimate system**

When the predilection for continuity is reflected in the overall form of the piece and there is more than one instrument to add colour and vary the spectral consistency of the music, the sound organization becomes explicitly textural. While disregarding the electronic part in Iancu Dumitrescu's (b. 1944) *Ursa Mare* (1983), the interplay between harmonically rich sound effects and different other instances will still prevail as a textural structuring method.

[20] Xenakis, Iannis, *Formalized Music, Thought and Mathematics in Composition*, p. 219-222.

Ex. 12

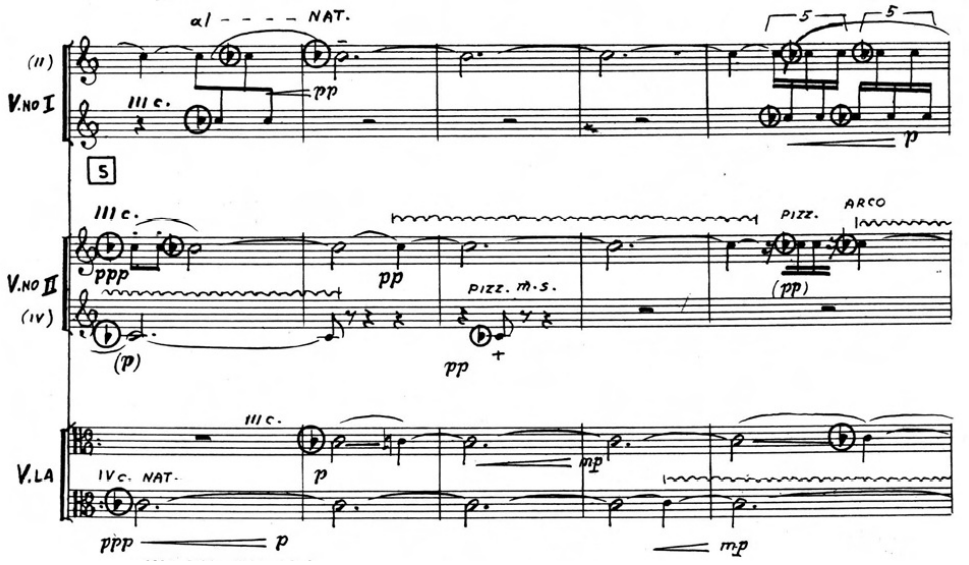


Iancu Dumitrescu – *Ursa Mare*, page 9

The imperceptibility of detail does not suffice as a definition of texturalism because it must be the consequence of a typical sound organization and not of a sole acoustic phenomenon. The sound organizations that are specific to texturalism always imply the vertical plane, therefore the simultaneity or superposition of elements, but do not necessarily have to reach the level of agglomeration. Examples of such organizations that are only focused on a few sounds can be found in the microtonal pieces of Giacinto Scelsi (1905-1988), which are based on slow glidings through the sound spectrum. Using a separate staff for each string of the four instruments Scelsi creates in *Quartetto No. 4* (1964) a continuously changing compact fabric, like a sound object that repeatedly reveals new parts[21] or new timbral facets.

[21] Griffiths, Paul, *Modern Music and After*, 3rd edition, Oxford University Press, New York, 2010, p. 143.

Ex. 13



Giacinto Scelsi – *Quartetto No. 4, m. 5*

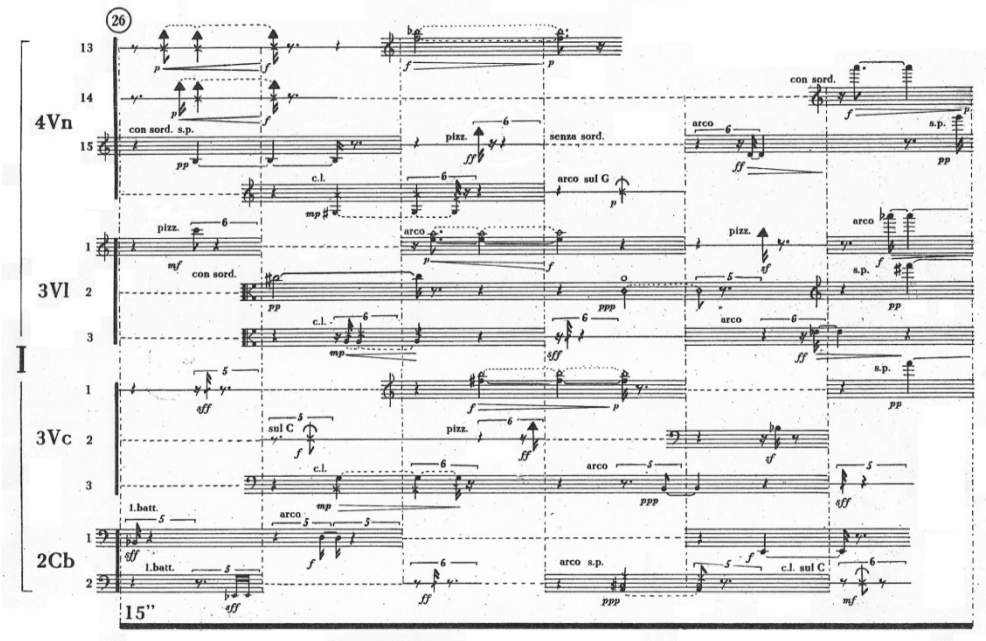
As long as texture is regarded, if not as another organizational paradigm besides monophony, homophony, heterophony and polyphony, then as a synthesized next stage, from the various theorizations on these paradigms there can be made assumptions about some of texturalism's particularities. In most of its manifestations texturalism means the superposition of these elementary paradigms that lose their functional and normative frames in the general context, but because in a monodic sound organization there is just one vertical layer and in homophony the horizontal plane predominates, only heterophony and polyphony are of special interest.

Based on the characteristics of the processed melodic lines and on the involved verticalization principles or syntactic archetypes, the polyphonic technique will configure diverse structures, some stylistically defining texturalism. The infinitesimal phasing between the superposed polyphonic voices and also the eschewal of any temporal marks accentuates the multifariously perceived timbral and dynamic fluctuations of these structures[22]. Polyphony's melodic lines can be replaced with distinctive sound configurations according to the dictum: „complexum

[22] *Musiques: Un Encyclopédie pour le XXIe siécle*, vol. 1 – *Musiques du XXe siécle*, sous la direction de Jean-Jacques Nattiez, ACTES SUD, Paris, 2003. Dujka Smoje – *L'audible et l'inaudible*, p. 302.

contra complexum"[23]. Such a distinctive configuration can be found in Krzysztof Penderecki's (b. 1933) *Tren ofiarom Hiroszimy* (1960) in the form of a pointillist texture which is developed as a canon and is made out of an aggregation of playing techniques, isolated sounds and harmonics.

Ex. 14



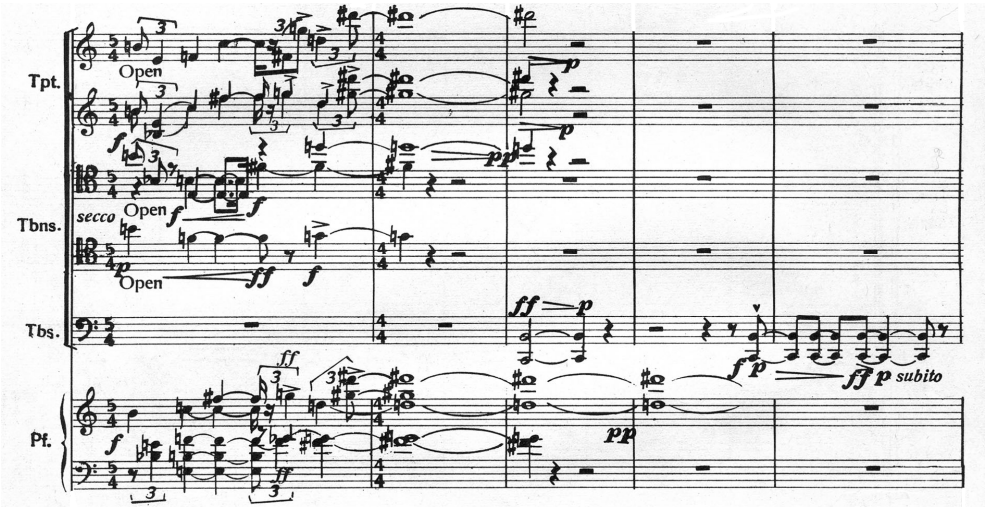
Krzysztof Penderecki – *Tren ofiarom Hiroszimy*, figure 26

The heterophonic syntax can also be one of the means of structuring textures. A textural discourse can be entirely elaborated through heterophony by placing it in the field of agglomeration[24], or typically varèsian sound blocks can be formed through a gradual accumulation of timbre, with little rhythmical deviations, on an intervallic pattern (Ex. 15).

[23] Vitányi, Iván, *A zenei szépség (The beauty of music)*, Zenemükiadó, Budapest, 1971, p. 210, quoted in: Angi, Ştefan, *Prelegeri de estetică muzicală (Lectures on musical aesthetics)*, vol. II, Tom 1, Editura Universităţii din Oradea, 2004, p. 458.

[24] Niculescu, Ştefan, op. cit. p. 285.

Ex. 15



Edgard Varèse – *Déserts* (1950-1954), m. 30-34

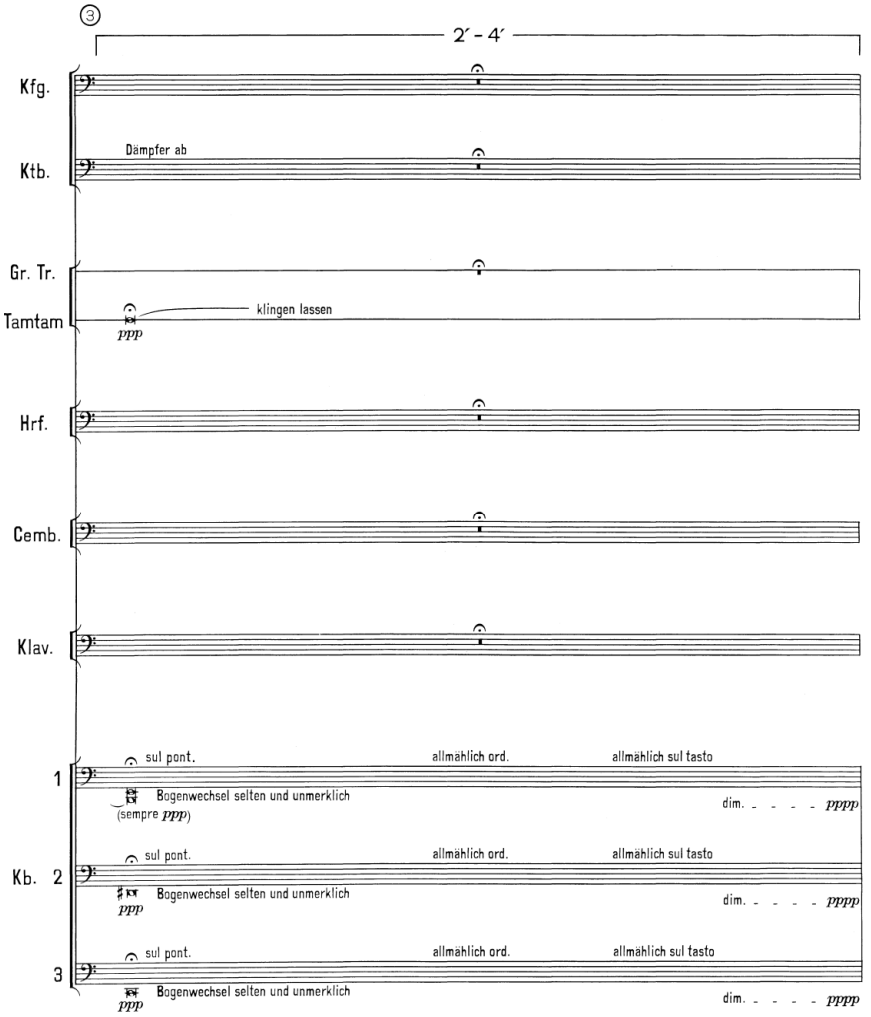
However, texturalism cannot be limited to these four organizational paradigms because textures can be generated through other syntactic structures as well. Through the multiplication of each voice's developing plane so that the sound space is filled with dispersed elements without any syntactic relation to monophony, homophony, heterophony or polyphony, the already identified pointillism of *Tren ofiarom Hiroszimy* can configure compact webbings in which the perception of the detail is redundant. Sustained sounds can also be used as means of eschewing the sense of temporality and to dilate or converge the musical discourse into an uniform texture because the impulses needed to sustain a constant amplitude inevitably produce timbre and dynamic variations, thus enriching the sound spectrum[25]. A good example of such a texture appears in Ligeti's *Fragment* (1961), in which a four-note chord is sustained between two and four minutes by three double basses. The bowing must be rare and imperceptible because the timbral transformation is rendered by the gradual change in playing from sul ponticello to sul tasto (Ex. 16).

Other types of textures that do not imply monophony, homophony, heterophony or polyphony, are those realized using the graphic notation.

[25] „Even a single interval, sustained through long periods of time by instrumentalists whose bowing or breathing inevitably varies the timbre and intensity of that interval, can acquire a rich multiplicity of overtones, harmonic spectra that draw the listener into a subtle, fascinating sound-world." – Whittall, Arnold, op. cit., p. 326.

Graphic notation enables the creation of special sonorities, but because graphism is only a substituent of the traditional semiotics, textures can only be configured through specific sound organizations.

Ex. 16

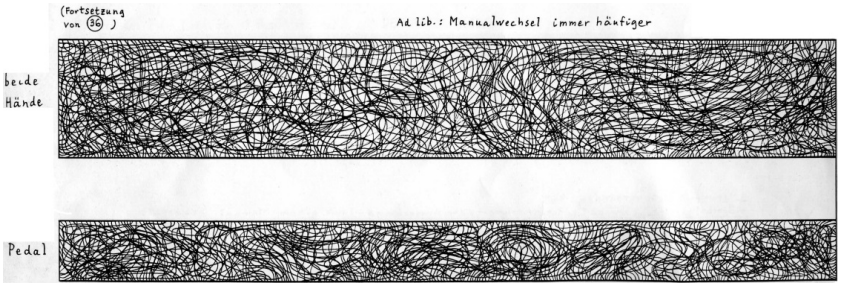


György Ligeti – *Fragment*, m. 3

When horizontal black beams are used as signifiers of sustained clusters that determine the entire musical discourse, the composition's sound organization may be reduced to these cluster's actual structures. Ligeti's *Volumina* (1961-1962) for organ displays precisely such a particular situation. In one of the piece's sections Ligeti marks the inner undulating

movement of the clusters as a dense fabric, thus making a graphic analogy to texture (Ex. 17).

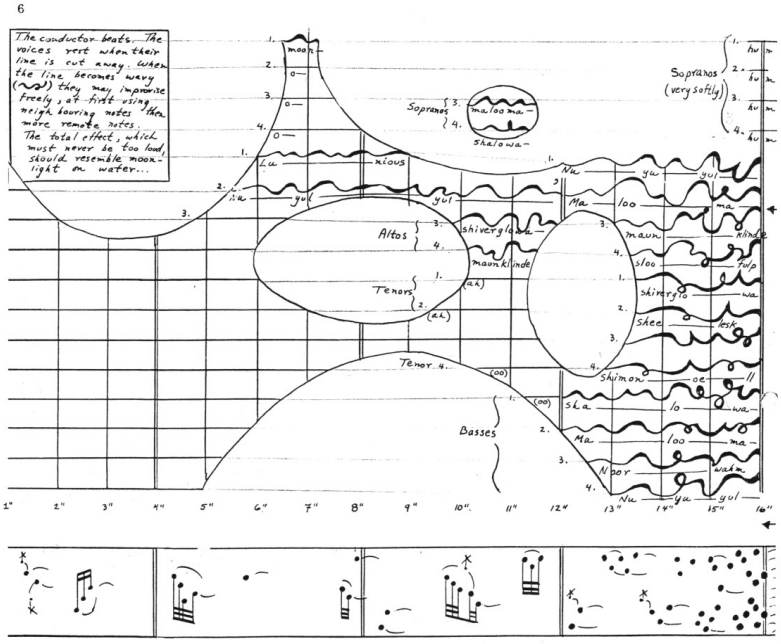
Ex. 17



György Ligeti – *Volumina*, page 19

Epitaph for Moonlight (1968) by R. Murray Schafer (b. 1933) is an example in which clusters are varied polyphonically through gradual changes of structure (Ex. 18). Each horizontal line represents a voice of a semitonal cluster that is diversified through structural pauses and irregular oscillations of its voice's individual frequencies so that most of the graphic configurations can be nevertheless associated to polyphony.

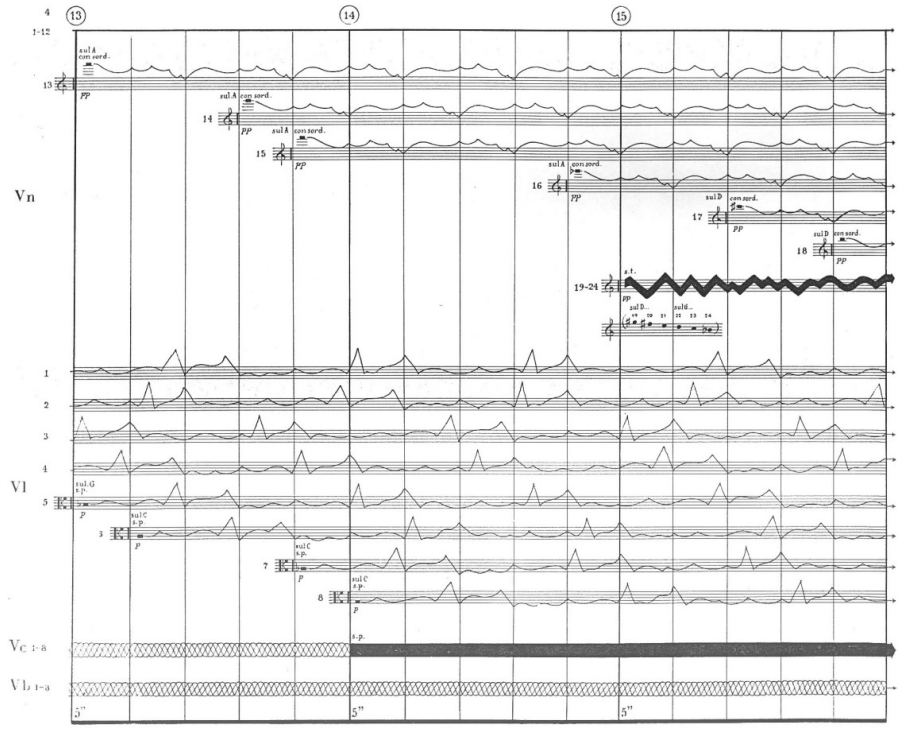
Ex. 18



R. Murray Schafer – *Epitaph for Moonlight,* page 6

In Penderecki's avant-garde period, the graphic notation is used to indicate the contour of clusters or melodic lines but the sound organizations are typical to the polyphonic aspects of texturalism.

Ex. 19

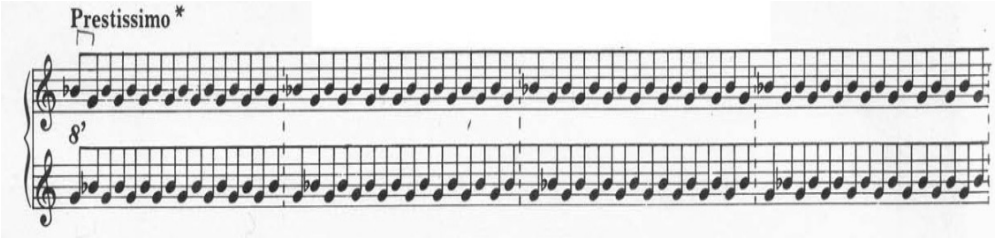


Krzysztof Penderecki - *Polymorphia* (1961), page 4

A different way of transcending beyond the limit of individually perceiving each sound is playing in a very fast tempo. Psychological research shows that the limit of discerning individual sounds is about twenty events per second, which means a duration of 0,05 seconds for each event. This temporal threshold[26] determines sounds that succeed in a time interval smaller than 0,05 seconds not to be perceived separately. Although in *Continuum* (1968) for harpsichord Ligeti manages to confer an undetailed contour to an isorhythmic discourse played in a fast as possible tempo, the sound organization is improper to texturalism because in every moment of the piece the vertical plane has as a constituent a single harmonic interval (Ex. 20). The harpsichord's rich timbre and the fast tempo both influence the perception in this case more than the sound organization.

[26] Urmă, Dem., op. cit., p. 113.

Ex. 20



György Ligeti – *Continuum*, beginning

While the tempo acceleration and unsynchronized superposition of voices affects the discrete perception of duration, the indetermination of pitch, sometimes the result of extended techniques, contributes to the homogenization of the musical discourse. A special case of uncertainty in the determination of both frequency and duration can be found in the execution of glissandi[27]. The brief duration of the sound in each parametric phase of its acoustical envelope disperses its oscillations in a frequency band[28]. The indetermination of any particular pitch or duration catalyzes their undifferentiation in the structural level. In Xenakis' *Metastaseis B* (1953-54), this indetermination of the sound parameters is intensified by rendering curved graphic planes as massive stratifications of glissandi, as if the orchestra was emulating an architectural plane with every line drawn by an individual instrument (Ex. 21).

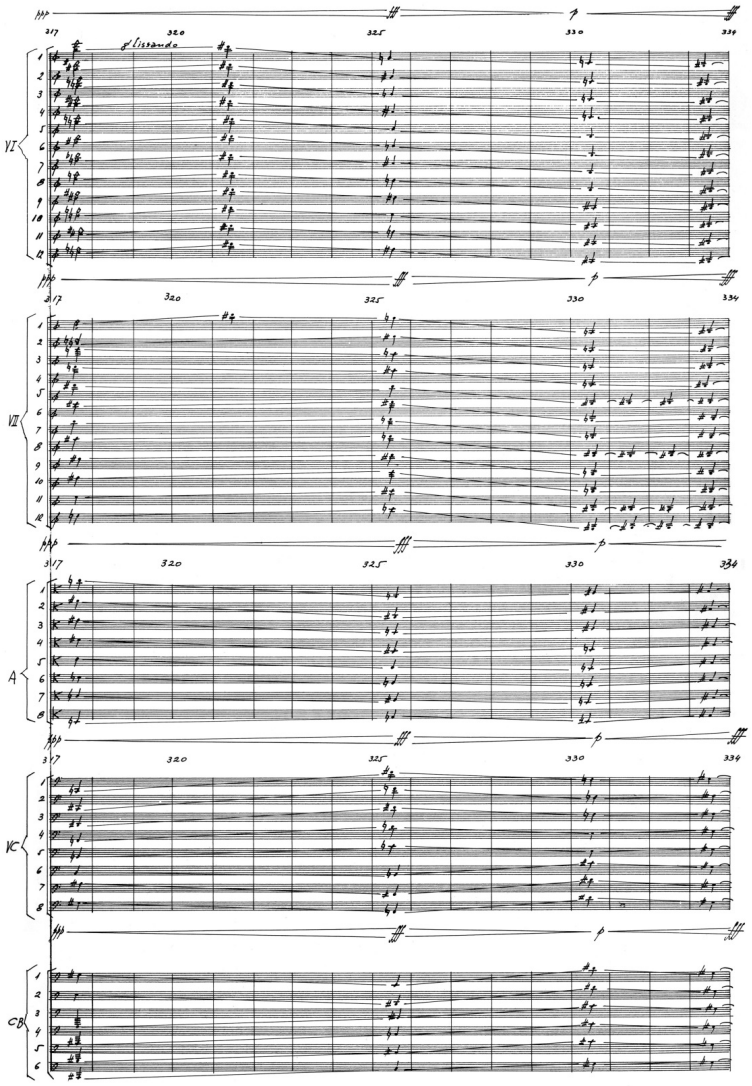
Intensity is also related to pitch and thus contributes to the blurring of detail. The fainter a sound is, the finer the differentiation of its pitch becomes[29]. If the pitches are close enough to each other, like in clusters, they cannot be precisely perceived save when they are loud enough[30]. On the other hand, prolonged intense tones make the pitch of their neighbouring sounds seem higher[31].

Although the rarefied states of texturalism can be exemplified through sound organizations in which the detail is perceptively undifferentiated,

[27] ibid, p. 348.
[28] ibid.
[29] ibid, p. 109.
[30] ibid.
[31] because „a prolonged deformation of the tectorial membrane in the stimulated region produces a distortion of the neighbouring sounds" – ibid, p. 355.

isolated sounds can appear in a typically textural discourse when they represent the temporal extremities of certain progressive structures[32].

Ex. 21



Iannis Xenakis - *Metastaseis B*, penultimate page

[32] „because density is the basic measure of texture, it makes sense to conclude that the greatest number of notes with different timbres occurring as fast as possible represents the thickest texture. With this as the extreme and a single note as its opposite, concepts of texture progression emerge" – Cope, David, *Techniques of the contemporary composer*, Schirmer Thomson Learning, p. 99.

Besides the inner fluctuations of the sound mass, such progressive structures exemplify another way of attaining the temporality of the musical discourse, and by focusing the sound manifestation on a compact group of frequencies, the sound mass ca be redirected through the sound space[33] both vertically and horizontally.

The textural agglomeration appears to be limited by the aleatoric superpositions of some sound waves with incongruous frequencies, thus by an analogy with noise. Only in the presence of a compositional plan and a structural coordination does the sound mass achieve a discoursive effect. The multitude of specifically textural sound organizations determines the classification of some compositions with common characteristics into an elaborated and defined system, namely texturalism.

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[33] ibid, p. 35.

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