Computer Technologies on Serve to Texture Analysis for a Performer

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ABSTRACT: The article deals with the author's concept of a search in figurative writing on the basis of which a method of handling computer technologies for the analysis of setting is being introduced. Examples from clavier and piano pieces by William Byrd, Domenico Scarlatti, Johann Sebastian Bach, Wolfgang Amadeus Mozart and Arnold Schönberg are chosen to demonstrate peculiarities in analysis of compound textures (of combinatorial type). The method of marking figures (patterns) in a texture area with graphic frames helps to explain general and individual mechanisms of creating musical texture.

KEYWORDS: computer technologies, texture, texture analysis, figurative writing, epoch style

STATING THE PROBLEM

A PERFORMER'S guide to a text is a special way of deep penetration into a composer's concept. While examining a note text and incarnating it into concrete sounding an executor looks at texture peculiarities first of all. So texture problems are in the focus of a performer's attention.

The modern texture theory points out two phenomena important in texture making – figuration and doublings. They participate in shaping texture images. 'Figurative writing' means the totality of devices for artificial putting into shape and organizing the smallest elements of musical texture. Thorough examining of figurative writing in a piece is very important. A modern computer has many graphical programs. Even a primitive one, such as *Paint*, has enough instruments that can be useful in texture analysis. Choosing frames to point out figures or tunes in a texture of a piece helps finding out mechanisms of constructing a setting. The goal of this article is to show possibilities of using computer graphics in texture analysis.

PECULIARITIES OF FIGURATIVE WRITING ANALYSIS IN CLAVIER AND PIANO PIECES OF DIFFERENT EPOCHS

The Baroque epoch is full with masterly styles of working on texture, so texture composition in pieces of this period needs thorough analysis and special investigation of its notation. The high level of managing figurative devices in English virginal music, practically at the dawn of the clavier era, shows significance of such art to instrumental music, its outstanding position in music history. There were individual devices of operating figures and tunes in the Baroque era:

- technique of using variants of figurative patterns (William Byrd);

- intricate technique of combining figures and tunes (Domenico Scarlatti);

- transpiercing texture of a clavier piece with basic figures (Johann Sebastian Bach);

- combinatorial approach to composing a texture.

These devices were taken to the following epochs and became characteristic to many famous styles.

Byrd's fantasy *Bells* for virginal can serve as an example of variant-combinatorial approach to organizing texture elements. The piece is written in a compound setting – with predominance of counterpoint, the whole composition is based on 'white diatonic' and the bass line is like cult sequences *ut-re-mi.* All the patterns appearing in Byrd's fantasy are shaped of the initial figure, its *initio*. The tetrachord *sol–fa–mi–re* (melodic element *a*) changes thanks to introduction of figurative tones, so variants a^1 and a^2 appear. Renewing of the initial set of elements is connected with changes in character of the movement – from the straight going to the configuration shaped of waves – that forms *b*. Up-going and down-going variants b^1, b^2 and b^3 take turns further. Both basic elements (*a* and *b*) are turned to *mi.* A new element *c* descends to *la* but has inclination to the tonic *do*. The figures are being varied, they keep their basic sense. Pointing out the kern of patterns with the help of special frames forces the visual obviousness, shows the fluidity of the varitype thematic process (cf. Chernaya 2005: 20–23):

Example 1 (William Byrd, *Bells*).

Intricate combinatorial play on different levels of composition is characteristic to several clavier pieces by Domenico Scarlatti. In changeable, "highly-strung with simultaneously coming impulses" texture of his sonatas one can find combinatorial texture as well (Okrainetz 1994: 132). For example, a play with tunes is being led in the Sonata K. 156 in C major. Only letter symbols are used in the analysis of the initial fragment of this piece:

Example 2 (Domenico Scarlatti, Sonata K. 156 in C major).

Tunes *a, b, c,* occupying two measures each, and a motif-helper *x* (2 times shorter) participate in constructing the initial 4 measures. As the technique of register imitation is being used, the following scheme appears:

$$a \quad b \quad b \quad c \quad c^1 \quad \quad c \quad c^1$$
$$a \quad \quad x \quad b(R) \quad \quad b(I)$$
$$a \quad \quad \quad \quad x$$

The tune *a* has the significance of the *initio*, it is the capital letter, the vignette of the text, so the further figures are related to it. The tune *b* is the counterpoint to the initial pattern, later on in the crawfish variant and in inversion it follows the other player in this game. The tune *c* has 2 rhythmically even variants – with the stop on dominant tone (*c*) and with the goal on the tonic with a trill (*c*1). Each of the introduced elements is repeated individually: *a* – only vertically, *c* – only horizontally, doubled *b* while being moved vertically is transformed in inversion.

Bach's clavier pieces form an inexhaustible source for research. Among the outstanding features of the composer's setting are the original technique of transpiercing the texture of his compositions with basic figures and using the combinatorial approach to the organization of texture elements. Only one basic figure – a trill-like turn – is basic for both cycles in c minor from *The Well-Tempered Clavier*. Pointing out this element with the help of a simple frame proves the relativity of the musical material in both cycles.

Example 3 (Johann Sebastian Bach, Prelude in C minor from *The Well-Tempered Clavier*, book 1).

Example 4 (Johann Sebastian Bach, Prelude in C minor from *The Well-Tempered Clavier*, book 2).

The cycle in the first book is the most saturated with the basic figure appearances. The culminating point is situated in *Presto* with the canonical sequence of two voices. In the recitative the basic figure is lost but it comes back in the last bar of the Prelude (see Example 5). The last variant of the basic figure penetrates further all the layers of the contrapuntal texture in the Fugue.

Example 5 (Johann Sebastian Bach, Prelude in C minor from *The Well-Tempered Clavier*, book 1).

In the C minor cycle from the second book the basic figure is used quite differently. In the first part of the Prelude a thematic chain is formed (Example 4), in the second part of the piece the same turn is used as an ostinato figure concerning which a hidden melody is being formed (Example 6).

Example 6 (Johann Sebastian Bach, Prelude in C minor from *The Well-Tempered Clavier*, book 2).

It is obvious that 'rolling', 'bubbling' figures saturating musical texture of both Bach's cycles in C minor have the same semantic of artificial forming the image of catastrophe, even the revelry of the natural calamity.

Viennese classics created a very high level of individual figurative writing, especially Mozart's *ars combinatoria* of patterns in his chamber and clavier music must be mentioned in this content. Several pieces by Mozart can be analyzed with the help of computer graphics.

Combinatorial play in the setting of Sonata in D major, K. 311, demonstrates inexhaustibility of composer's fantasy (cf. Chernaya 2005: 166–170). A short musical vocabulary of the whole cycle is introduced in the 4 initial measures (Example 7). Figures *a*, *b*, *c* are separated with pauses as if they were persons introduced individually, figure *d* – a half-tone – is only slightly outlined with the help of a grace-note.

Example 7 (Wolfgang Amadeus Mozart, Sonata in D major, K. 311, first movement).

Figures *a* and *b* are constructed of smaller elements. For example, *b* consisting of three lines relative to each other is transformed in the third bar; its elements become basic for later figurations and for subjects appearing in the further elaboration of the Sonata's material.

The second subject of the first movement of the Sonata (Example 8) is based as the first subject on the same set of figures. Only *a* is given some 'rest' after 'making hard job'. On the contrary, *d* becomes a real intonation and appears several times.

Example 8 (*ibid*.).

Not only in the first but in the second and the third movements of the cycle the same set of figures is basic as well. See Examples 9 (the beginning of the second movement) and 10 (the beginning of the third movement) in which frames make obvious the relativity of their material. In Example 10 it can be pointed out that figures *b* and *c* in new rhythmic conditions are multiplied.

Example 9 (Wolfgang Amadeus Mozart, Sonata in D major, K. 311, second movement).

Example 10 (Wolfgang Amadeus Mozart, Sonata in D major, K. 311, third movement).

The play in this sonata has certain rules combining exact repetitions of a small set of elements with possibilities of their renewing and growing up new figures. Variety of the play becoming obvious with the help of the set of frames tells the executor about the experimental character of the composition and about the special position of this Sonata among other sonatas by Mozart.

The 20ᵗʰ century is famous for Neo-Classical and Neo-Baroque styles. Many composers turned to deep studying of Baroque texture and in some cases it brought them to creating original techniques by using rules of old contrapuntal and combinatorial art in new means of music. Among them very important were pieces by Paul Hindemith and Arnold Schönberg. Each great composer-pianist had his own complex of devices mirroring in the texture.

Schönberg incarnates his ideas individually using old figurative and contrapuntal devices in a new sense. Combination of masterly polyphonic technique and original figurative writing dealing with combinatorial art can be mentioned in Five Pieces, Op. 23, for example, in the third piece of the cycle – *Langsam* (cf. Chernaya 2007: 123–128). It begins as a fugue with a theme and an answer that is varied with figurative tones and doublings (Example 11a). In the last 5 measures sounds of the theme and the answer are collected in complexes that form with the axe *sol–do* the central element of the system (CES: Example 11b, c).

Example 11 (Arnold Schönberg, Five Pieces, Op. 23: No. 3).

As if in compound counterpoint constructions patterns introduced in the first partition of the piece appear in permutations and transpositions. Except the theme being a sound complex, often changing its appearance, Schönberg uses chromatic tunes and figurative turns. There are two interludes shown in the Example 12 a and b where frames point out relative figures and make rhythmic and other peculiarities of composer's technique understandable.

a:

b:

Example 12 (*ibid*.).

One of the partitions in *Langsam* is constructed as a figurative chain. Specialty of this device deals with the intricate technique: firstly, tones of the augmented answer lay counter to tones of the augmented subject; secondly, in order to keep music activity 'faster' durations accompany 'slower' melodies (Example 13).

Example 13 (*ibid*.).

Accompanying sounds in thirds do not leave the frames of sound complexes of the piece. The theme in the beginning of the partition is in direct movement, the answer is in inversion, and then the whole construction is inversed. In the end of the partition mirror position of the chromatic figure is found and stated.

Schönberg's masterly piano texture is full of hidden features if we read it contrapuntally and computer technologies give good instruments for schematic bringing to light its elements and mechanisms of texture making.

CONCLUSIONS

Analysis of musical texture as if through the prism of figurative writing with the help of computer graphics has big practical significance in a pianist's work. Thinking on 'events' occurring in a note text allows finding a way for a proper interpretation and in many cases it helps in understanding a composer's ideas. There are no universal rules for handling computer graphics in texture analysis, the composer's style itself makes you choose this or that frame (a set of frames) and think on their use while making research or pointing out 'events' occurring in the concrete piece.

References

Chernaya, M. (2005). *Istoriya figuracionnogo pis'ma v zapadnoevropeyskoy klavirnoy (fortepiannoy) muzyke.* Chast' pervaya: *Ot istokov do klassicheskogo perioda* [History of Figurative Writing in West European Clavier (Piano) Music. Part One: From the Beginnings to the Classical Period]. Tver': Tverskoy Gosudarstvenny Universitet.

Chernaya, M. (2007). *Istoriya figuracionnogo pis'ma v zapadnoevropeyskoy klavirnoy (fortepiannoy) muzyke.* Chast' tret'ya: *muzyka pervoj poloviny XIX veka* [History of Figurative Writing in West European Clavier (Piano) Music. Part Three: First Half of the 19th Century Music]. Tver': Tverskoj Gosudarstvenny Universitet.

Okrainetz, I. (1994). *Domeniko Skarlatti: Cherez instrumentalizm k stilyu* [Through Instrumentalism to Style]. Moskva: Muzyka.