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The parallelism between linguistics and music – Noam Chomsky and Heinrich Schenker

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Abstract: *The paper aims to compare musical language with verbal language, creating a new perspective on music and natural language. The three categories of linguistics, phonology, syntax and semantics are analyzed. Bernstein highlights the analogies between the linguistic categories and music, researching the same three components of linguistics in music. The possibility of applying the transformational grammar procedures to the musical text is studied. In the second part of the paper, the authors investigate the method of analysis based on harmony and counterpoint, differentiating several structural levels conceived by the theoretical musician H. Schenker. Schenkerian analyzes are a relatively recent appearance in the field of musical analysis, which proposes as an innovation in the field of musical analysis the structural vision of musical discourse.*

Key-words: *phonology, syntax, semantics, Schenkerian analysis, analytical system.*

1. Introduction

The configuration of the ascending path that was followed, in order to highlight how the experience was accumulated, clearly demonstrated that there is a “science of music”, a structural perspective of the musical text, which is based on a superior system of organization.

This paper is the result of research conducted by the authors in order to find new ways to approach the musical text, to allow music, locked in the score, to be reborn.

Contrary to the opinions that support an exclusively empirical way of studying music, as I stated earlier, there is a "science of music" a structural perspective of the musical text, which is a higher system of organization. This statement is confirmed by the perspective of musical linguistics. The connection

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between music and language is so close that it is difficult to draw boundaries. The main common field is their purpose: communication.

2. Congruences between music and language

The content of the paper includes the first nuclei of the authors' research, which were to become the strong (essential) themes of the personal training system. In this way it can be supported with original scientific arguments, the fact that a natural continuity was ensured between the Bachelor-Master-Doctorate education cycles.

The comparison of musical language with verbal language brings a new perspective not only on music, but also on natural language. Language research, in general, brings knowledge of man, of his way of reasoning and expressing himself. The statement of the linguist Noam Chomsky is edifying: *When we study human language, we are approaching what some might call the "human essence," the distinctive qualities of mind that are, so far as we know, unique to man* (Chomsky 2006, 26-33).

Biolinguistics is a relatively new discipline that explores the basic properties of human language. It investigates how language develops, how when it is put into practice, both in the thought process and in communication, the brain circuits through which language is processed and transmitted are configured (Samuels 2011, 29).

The first linguist to introduce the idea that we are born with a *"faculty of language"* is the linguist Noam Chomsky (Chomsky 1957, 47). In 1967, his idea was also substantiated by the German linguist Erich Heinz Lenneberg, who considers the biological structure of language in his book "**Biological Foundations of Language**".

Bernstein claims that the first morpheme produced by primitive man was "ma", as a natural consequence of the opening of the child's oral cavity, when he feels hungry and wants to attract his mother's attention.

2.1. Phonetics and phonology

The study of sound-linguistic systems is divided into two branches: phonetics and phonology. Phonetics is the science that studies spoken sounds and includes the study of the acoustic structure of speech and the mechanisms by which speech is produced and perceived.

Phonology deals with the study of sound patterns of language and includes the way in which spoken sounds are organized in higher units, e.g. syllables and words, how sounds vary as a function of context, and also how knowledge of the

sound patterns of language is represented in the mind of a speaker or a receiver (Patel 2008, 37).

Phonological systems are the infrastructure of languages. Each language is established on a phonological system consisting of a limited number of elements. These elements are of value in themselves only as far as they are opposed to each other.

Leonard Bernstein, in his televised lectures at Harvard in 1973, contradicts Ruwet's theory, finding it unconvincing (Bernstein 1973, 54). Although the German word "satz" means both a sentence and a symphonic work, as he remarks, comparing the whole piece with a sentence does not work, whereas if we take as phoneme the note, the sound, then a musical motif would be a morpheme, and in this case, "a musical phrase would correspond to a word, a musical section would correspond to a sentence, and the whole musical work to a phrase."

Bernstein concludes that music consists of interdependent sentences, linked by relative conjunctions and pronouns (Chanan 1994, 83). *Fred Lerdahl* and *Ray Jackendoff* produced "**A Generative Theory of Tonal Music**". Convinced that music brings evidence of their own logical organization, they were forced to recognize the danger of comparing music to language.

Bernstein argues in his lessons that music has a deep rhythmic structure, which is perfectly symmetrical, or periodic, which through various transformations generates a complex aesthetic surface, full of ambiguities. Interacting with rhythmic events, the harmonic texture is also produced by the transformation of a deep structure, and equally full of ambiguities, but governed by a different principle: the nature of the harmonic series (Chanan 1994, 84).

Following the three categories of linguistics, phonology, syntax and semantics, Bernstein studies the same three dimensions in music. He outlines the most exact analogies between the linguistic categories and music, due to the temperament it has in comparing the two systems, taking into account the ambiguity of the musical language.

Music and language are often compared as universal communication systems, based on hierarchically organized sounds and grammatical rules that determine the chaining of the components. After it was found that the processing of music and language activates the same brain areas, studies on the acquisition of the two languages begun. The question that arouses the interest of linguists and musicians is whether verbal language is learned by children as a musical system.

2.2. Structural congruences - construction logic

The structure of language consists of grouping individual units into sentences or larger structures. Ferdinand de Saussure observes that these structural units

combine with each other "syntagmatically" and "paradigmatically", related and opposite to the alternative units that would be allowed in the same group (Saussure 2011, 195). *Both require storage capacity for storing representations and the ability to combine these representations using a system of rules or structural schemes* (Jackendoff 2009, 195).

Like language, music is a universal language, in which distinct perceptual elements are organized in hierarchically structured sequences, according to syntactic principles (Lerdahl and Jackendoff 1983, 25).

The most typical representative of linguistic structuralism is Noam Chomsky, who continues his work in the field *Saussure* and *Sapir* (Saussure 2006, 42). Chomsky "set himself a twofold purpose: to find those non-apparent structures of speech (which he called deep structures) capable of explaining surface structures, as well as to establish the rules that transform deep structures into surface structures" (Chomsky 1978, 64).

The author of the theory of universal grammar is Chomsky. He proposes the hypothesis of "universal grammar" by which he understands "*the set of those innate biological structures and mechanisms, characteristic of the species homo sapiens, which can explain, starting from the information provided by the linguistic environment, the production of that competence described by grammars special features of different natural languages*" (Flonta 1994, 115).

What we notice is the possibility of applying the processes of transformational grammar to the musical text. Procedures such as negation, reversal, interrogation, can be performed in a musical "statement", by altering the sounds, reversing their order, as well as with the help of harmony, which has a decisive role in musical expression.

2.2.1. Syntax

The syntax can be defined as a set of principles that govern the combination of structural elements (such as sounds or words) into sequences.

Linguistic and musical sequences are not created by the random juxtaposition of basic elements. The combinatorial principles operate on several levels, such as the formation of words, sentences and phrases in language, and chords, harmonic progressions and tonalities in music (Patel 2003, 51-55).

The syntactic function has the role of framing a word in a sentence or phrase, aiming at the function it has in that context, while the morphological analysis refers strictly to the word focusing on its features. In other words, the syntactic analysis has an extended panorama, and the morphological analysis is more restricted, isolating somewhat the targeted word.

In the Schenkerian system, music is seen as a hierarchy, in which the notes, at any level, are considered "extended" by a sequence of sounds of the previous lower level. To perceive one or more sounds as belonging to a certain sound "associative hearing" is involved (Larson 2012, 71). The extension determines which sound is stable in a harmonic context. Prolongation also refers to the consonance-dissonance relationship, in terms of stability-tension (Larson 1997, 29).

2.3. Semantic congruences – from sign to signification

Semantics is a branch of semiotics, the "general theory of the sign", which studies the relationship between graphical systems and the background it describes. Music is, in turn, a graphic system, through which a sound background is described, generated by the intellectual and emotional experience of the composer. Semantics originated in France and is still widespread in French-speaking countries.

Semantics is a scientific field that seeks the meaning behind words, or, in the case of music, behind notes. Semantics follows the affective reaction determined by the signs, considered to be symbols, representations of some emotional realities. The relationship between linguistic and musical significance has a paradoxical character. Claude Lévi-Strauss remarks that music is "the only language with contradictory attributes, being at the same time intelligible and untranslatable" (Lévi-Strauss 1964, 82).

3. Schenkerian analysis - An expanding analytical system

"We should get used to seeing sounds as beings. We should learn to include in them biological determinations that characterize living things. (Schenker, H., traducere de Jonas, O., p. 6)*"*

Schenkerian analysis are relatively recent in the field of musical analysis - they appeared in the interwar period, and were very widespread in Europe and America. The author of this theoretical method of analysis is Heinrich Schenker. His main works are **Harmonielehre** - 1906; **Kontrapunkt**, 2 vols. - 1910, 1922; **Fünf Urlinie-Tafeln** - 1932; **Der freie Satz** - 1935. In these publications, Schenker initiates a method of analysis based on harmony and counterpoint, differentiating several structural levels, the deepest being called Ursatz, which is the basic harmonic structure of any piece of music and is grafted on the relationship tonic - dominant - tonic harmonic (Koelsch 2012).

To reach Ursatz, reductions are applied starting from the foreground - which represents the surface level of the rhythmic-melodic unfolding, followed by the middle ground - the first reductions of the surface level and reaching what

Schenker calls background - the deep level of the work. The reductions are applied on two levels: harmonic and counterpoint. Initially, the harmonic reductions are made by eliminating the secondary steps and extracting the important harmonic functions that are constituted in extensions. These main functions also include the secondary steps, which can be embroidery, passage, or arpeggios arrangements. Horizontally, melodically, the reductions are applied in the same way, eliminating the passage notes - neighbor notes, embroidery notes, or consonant jumps - consonant skip (Schenker 2001, 92).

The innovation he brought in the field of musical analysis is the structural vision of the musical discourse, the hierarchy it imposes, justified by the tonal-harmonic relations and the musical syntax. Sounds and chords with important harmonic functions, such as tonic, are at the top of the hierarchy, referring to stable sound events, which induce a state of finality and resolution. Hierarchically subordinated are the harmonic functions that create tonal instability and tension, as dominant and subdominant.

The tonal system in Schenker's vision is based on the fundamental tone, which is also the basis of the system, being called the tonic. The third sound of the harmonic series, "the strongest harmonic", in turn, becomes a fundamental sound. By repeating this process, the series of ascending fifths appears.

In the Schenkerian system, music is seen as a hierarchy in which the notes, at any level, are considered "extended" by a sequence of sounds of the previous lower level. To perceive one or more sounds as belonging to a certain sound involves "associative hearing" (Larson 2012, 66-68). The extension determines which sound is stable in a harmonic context. Prolongation also refers to the consonance-dissonance relationship, in terms of stability-tension (Larson 1997).

3.1. Reliability and usefulness of Schenkerian analysis - from analysis to expression

Schenker's analysis is a complex system of analysis developed by the theorist Heinrich Schenker (1868-1935) in interwar Germany, spreading rapidly in America. His main works are Harmonielehre - 1906; Kontrapunkt, 2 vols. - 1910, 1922; Fünf Urlinie-Tafeln - 1932; Der freie Satz - 1935. In these publications, Schenker initiates a method of analysis based on harmony and counterpoint, differentiating several structural levels, the deepest being called Ursatz, which is the basic harmonic structure of any piece of music and is grafted on the relationship tonic - dominant - tonic harmonic (Schenker 2001, 30-32).

Due to the versatility they prove, Schenkerian analysis are safe tools for analyzing any piece of music, regardless of the intonation system in which it is written. The main attribute is structural clarity. The identification of the basic structure, of the

harmonic and melodic pillars, allows the unitary perception of a group of sounds. This principle of association is valid for all systems: tonal, modal, serial, etc.

The principles of Schenkerian analysis can be extended beyond the tonal space. Any musical discourse is conditioned by a coherence, regardless of the harmonic system in which it is created. If we were to abstract, all harmonic entities would fall into two broad categories: consonance and dissonance.

The deep background of Schenker's analysis is psychological in nature, as it follows the reactions that harmonic functions determine. A first discrimination that Schenker makes is to consider the minor as an unnatural state, as opposed to the adult, which he considers an initial state. The tonic function also has psychological implications, being the basis, the starting point of the work, and the function that is found in the subsidiary of the piece, by prolongation. Why is a Schenkerian analysis necessary for an interpreter? Why don't I just stick to a theoretical, purely written analysis? Because they seek the essence of the musical work, objectively, justified by the text, but as a final point, they have an understanding of the work as an evolving being. The performer must know the points of tension and relaxation to build his musical discourse on, and also to distinguish the essential from the non-essential. The hierarchy of sounds in a song is of particular importance for a fair phrasing and a precise outline of the phrase. Proof of their usefulness in the interpretive art is the testimony of some of the well-known performers, who confess that they find them particularly important and fascinating.

4. Conclusions

It can be concluded that the two analytical perspectives presented are an optimal solution in this regard. The structural-linguistic vision has the role of clarifying how the sounds are grouped, as well as the inner hierarchy within the song. It also captures melodic derivations, which allow associations with the original version, thus becoming much more accessible to consciousness.

Schenker's analysis introduces all the sound elements in the harmonic context, which creates in the musician's consciousness the idea of organicity of the piece. Another advantage of this system is its ability to adapt. Once he has mastered the basic principles, the musician can develop his own style of applying Schenkerian analysis.

Finally, it follows that the structural-linguistic perspective of music and the Schenkerian system of analysis is particularly useful and are sure means of penetrating the essence of musical structure.

References

Bernstein, Leonard. 1973. *The Unanswered Question, Musical Syntax.* Harvard. [Online] Available at: http://www.youtube.com/watch?v=r_fxB6yrDVo& feature=relmfu (accessed on July 2019)

Bernstein, Leonard. 1976. *The Unanswered Question.* New York: Harvard University Press.

Brown, Matthew. 2005. *Explaining Tonality: Schenkerian Theory and Beyond.* New York: University of Rochester Press.

Chanan, Michael. 1994. *Musica Practica, The Social Practice of Western Music from Gregorian Chant to Postmodernism*. London: British Library Catalogouing in Publication Data.

Chomsky, Noam. 1957. *Syntactic Structers.* Hague: de Gruyer.

Chomsky, Noam. 2006. *Language and Mind*, 3rd edition. Cambridge University Press.

Flonta, Mircea. 1994. *Cognitio. O introducere critică în problema cunoaşterii* [Cognitio. A critical introduction to the problem of knowledge]. București: Editura All.

Jackendoff, Ray. 2009. "Parallels and Nonparallels between Language and Music. Music Perception." *Music Percept* 26: 195-204.

Koelsch, Stefan. 2012. *Brain and Music*. Wiley-Blackwell, John Wiley & Sons Publication 1st ed.

Larson, Steve. 1997. "The Problem of Prolongation in "Tonal" Music: Terminology, Perception, and Expressive Meaning". *Journal of Music Theory* 41(1): 101-136.

Larson, Steve. 2012*. Musical Forces: Motion, Metaphor, and Meaning in Music* (*Musical Meaning and Interpretation*). Bloomington, Indianapolis, Indiana University Press.

Lerdahl Fred and Ray Jackendoff. 1983 "An overview of hierarchical structure in music." *Music Perception* 1/2: 229–252.

Lévi-Strauss, Claude. 1964. *The Raw and the Cooked: Introduction to a science of Mythology*. New York.

Patel, Aniruddh D. 2003. "Language, music, syntax and the brain." *Nat Neurosci* 6: 674–681.

Patel, Aniruddh D. 2008. *Music, Language, and the Brain.* New York: Oxford University Press.

Samuels, Bridget D. 2011. *Phonological Architecture: A Biolinguistic Approach*. New York: Oxford University Press.

Saussure, Ferdinand de. 2006. *Writings in General Linguistics*. Oxford: Oxford University Press.

Saussure, Ferdinand de. 2011. *Course in General Linguistics*. New York: Columbia University Press.

Schenker, Heinrich. 2001. *Free Composition Set: New Musical Theories and Fantasies*. USA.

Tillmann, Barbara. 2012. "Music and Language Perception: Expectations, Structural Integration, and Cognitive Sequencing." *Topics in Cognitive Science* 4(4): 568-584.