

## SOME ASPECTS OF PERCEPTION IN MUSIC

## UNELE ASPECTE ALE PERCEPȚIEI ÎN MUZICĂ

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## CZU 78.01:159.937

*The aim of current article is not to provide a psychological explanation of human reaction to the music, but rather to follow the idea of music phenomena explanations throughout time. It encompasses three main aspects: human perception, certain music elements, and historical transformations based on the evolution of music theory. These aspects are illustrated through the subjective and objective features of perception. Music elements are described the way they were explained by several remarkable theorists throughout time. The elucidation of some aspects of perception in music occurs via different interpretations that theorists provide as the basis of historical evolution of musical thinking and understanding.*

**Keywords:** music perception, music evolution, music elements, music theory, history of theory

*Scopul articolului de față nu este de a oferi o explicație psihologică a modalității umane de a reacționa la muzică, dar, de a urmări cum a fost explicat fenomenul muzical pe parcursul timpului. Drept bază servesc trei aspecte principale: percepția umană, elementele muzicale și transformările istorice în urma evoluției teoriei muzicii. Acestea sunt analizate prin prisma trăsăturilor subiective și obiective ale percepției. Elementele muzicale sunt descrise așa cum erau interpretate într-o anumită perioadă istorică. Elucidarea unelor aspecte ale percepției în muzică rezultă în baza acestor interpretări, care servesc drept punct de pornire a evoluției și înțelegerii gândirii muzicale.*

**Cuvinte-cheie:** percepția muzicală, evoluția muzicală, elemente muzicale, teoria muzicii, istoria teoriei

Perception had always played a crucial role in music, because it is connected with the way in which the man perceives, experiences, or reacts to specific information — sounds. All sounds are organized temporally in a particular manner and possess certain characteristics, such as pitch, timbre, and intensity. However, the truth about sounds and music is the strong connection with the laws of physics, natural laws of human perception, and their limits. As everything in this world, music has evolved and changed due to circumstances, and based on the level of human understanding. While the nature with its tremendous diversity has a conservative property derived from its cyclic evolution, human nature always seeks changes, because everything becomes in a relatively short time “used, old, or boring”. Therefore, there is a continuing research to find something new, or else, a different way to look and explain the same phenomena — what is heard and how is heard. The history of music theory allows us to acknowledge how music developed in time, to see the evolution of music explanation, and realize the perception features.

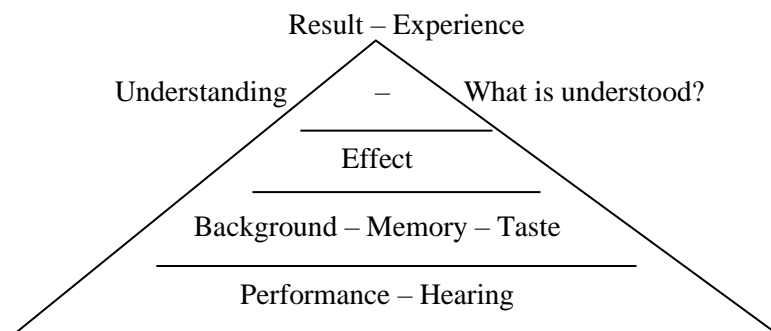
The aim of this article is not to provide a psychological explanation of human reaction to the music, but to follow the idea of music phenomena explanations throughout time. I will focus on extremities: the *subjective* and the *objective* aspects of perception. While the subjective aspect belongs to hermeneutics, in other words to beliefs, the objective facet is an adherent of rhetoric, with its need to organize and classify elements which constitute music and giving them a rational explanations.

The subjective aspect is the most controversial due to a huge diversity of possibilities to understand music. For instance, one of the most notable roles is held by religion, providing the organizational law for both, spiritual and social life for many centuries. Therefore, under its aesthetics music knew the approach of dedication to the God and had to serve religion’s values. Another side of subjective aspect is the taste, probably the most arguably, because it is entirely based on each person experience and identity. In fact, there is no absolute truth about what is right, there is no good or bad.

Every culture possesses its own representation of what music is, a “map” of the domains of inquiry and the relations between these domains [1, p.27].

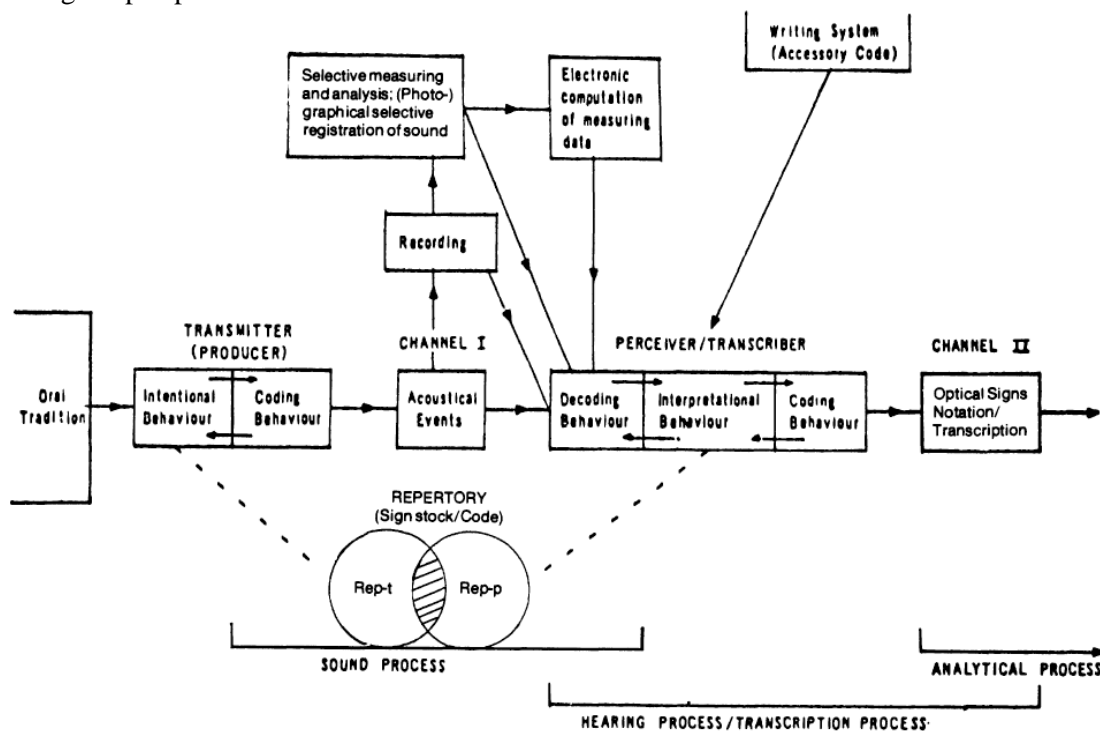
Whereas the subjective aspect is omnipresent in music, I would prefer to focus on objective features without disregarding subjective interpretations. The main reason is that the subjective beliefs create a predisposition that more or less, influences the perception. Music elements themselves exist without any judgment, as part of the nature; therefore, it is always the question how human perception interprets them.

The rhetoric facet offers the possibility to rationalize music phenomena. Many theorists mentioned the role and the importance of the experience in music, as a consequence of how music influences the man. The following chart offers a classification based on gradual layers through which perception acts:



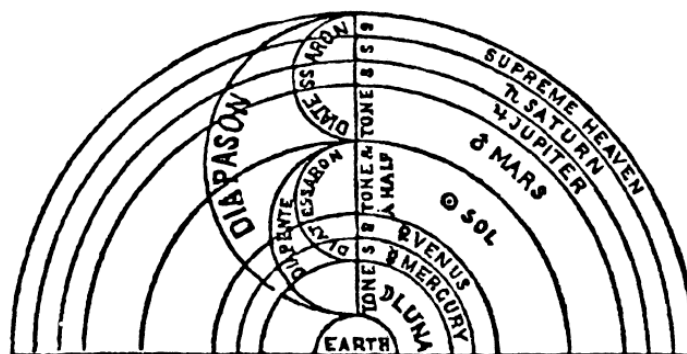
The layers above are — “filters,” through which music is processed and which directly lead to the result of perception. The process of hearing results into the next level, where background, memory and taste influence the result — the effect. Further, in strong connection with all previous factors, something is understood and there is an individual way for that as well. Finally, the result and experience is both, subjective and objective, a point where the music acquires meaning.

Doris Stockmann [2] presents the “chain of communication” for folk music, from a psychological perspective:



This chart above illustrates in a complex manner all possible processes, including modern possibilities of processing the sound, starting from oral tradition and including both, acoustic world and technology. This chain of communication comprises both, the subjective and the objective, although it elucidates a modern, scientific explanation of perception phenomena.

In order to understand how perception has arrived at such complexity, it is important to bring light on some aspects of perception from ancient time and on. Based on available documents, ancient thinkers are the first ones who have described their musical understanding based on universal, astrological concepts. Most famous is Pythagoras universal explanation of intervals, as one of the music elements:



• Pythagorean view of the universe, in musical intervals. From Sir John Hawkins *A General History of the Science and Practice of Music*, I (1853; reprint, London, Dover, 1963), 65.

One must acknowledge the ancient thinkers' tendency to connect the music understanding with the whole universe, as a significant part of this universe.

From the fifth century BCE until around 1800, rhetoric served as the most prestigious and influential means of conceptualizing and organizing a language, and articulating how it can be best effective, persuasive, and elegant [3, p.847]. During the ancient Greek period, Aristoxenus was the first who theorize about musical motion. In explaining how the voice moves when singing melody, he touches several times on a unique functional quality of notes – which he calls *dynameis* — determined by their position within the tetrachord: “In respect of the magnitudes of intervals and the pitches of notes, the facts about melody seem to be in some way indeterminate, but in respect of function (*dynameis*), forms and positions they appear to be determinate and ordered” [4, p.180]. Aristoxenus also divide music into three domains: pitch, rhythm and melody, by analyzing them based on observation of musical practice. Thus, Aristoxenus reflects the empirical phenomenon of sounding music over the disparate discourses of Pythagorean speculation and traditional metric respectively, and thus creates an autonomous music theory subordinated only to a general systematics [1, p.28]. The idea of motion nowadays is reflected through the five characteristics of energetics [5]:

thematization of “force”	– the idea of theme is based on various features
musical logic	– the progress of events
centrality of form	– how units are integrated into a dynamic whole
anti-historicism	– the natural “law”, ignoring all extra-musical, social factors
cultural-ethical mission	– the sacred duty of rescuing and reviving musical culture

From another perspective, it necessary to point out the five classical parts of rhetoric, which were established by the early Roman period (c.100 BCE):

<i>inventio</i>	– addresses the problem of developing ideas
<i>dispositio</i>	– determine the linear ordering and arrangement of ideas
<i>elocutio</i>	– is the source of style and expression
<i>memoria and pronunciatio</i>	– deal with aspect of performance, memory and delivery; is the technique of making the conceptualized oration persuasive to an audience

In connection with perception, these elements express a logical line of how the man understands that a process needs to occur. This process was taken into music as well. Likewise, it is obvious the analogy between the five traditional parts of the rhetoric and the five characteristics of energetics.

As a result, we can see the tendency to deal with something real, a “material” substance, rather than be in the cage of speculative thoughts. Another interesting approach in connection with psychological aspects of perception has been made in the early period. For example, Franchino Gaffurio in *De harmonia* closes with the resonances of musical systems with virtue, the sense, and the cosmological structure of the world, resonances reflected in the structure and disposition of his treatises [6]. Athanasius Kircher explains the idea of *Misurgia universalis* [7]. In addition, he wrote two great divisions of respectively seven and three books:

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| <ol style="list-style-type: none"> <li>1. The nature of sounds and voice.</li> <li>2. The music of Hebrews and Greeks.</li> <li>3. The basic mathematics of harmony.</li> <li>4. The division of the monochord.</li> <li>5. The elements of composition.</li> <li>6. Musical instruments.</li> <li>7. Style, affect, and the relations of poetry and music.</li> </ol> |
| <ol style="list-style-type: none"> <li>8. Combinatorics and its application to the composition of music.</li> <li>9. The magic of consonance and dissonance.</li> <li>10. The correspondence of <i>musica mundana</i> to the harmonies of nature, the spirits, and the universe.</li> </ol>  |

The melody had always been a strong argument that catches the attention. Therefore, it had consistently concerned theorists. The word invented for a single melodic line — monody, was formulated by the German theorist Wolfgang Caspar Printz (1641–1717) [8, p.162]. In connection with the melody, we can follow many ramifications that led to focus the attention to elements such: tone perception, intervals, modes, scales, or even compositional tools for writing a melody. Each of these elements could be a subject for an individual research.

One of the prominent theorists, who were concerned about melody and tone perception, was Johann Mattheson. He argued that music was a “mathematical science that demonstrates through numbers the true difference and categories of sounds, and from which we can learn to compose the most skilled and natural harmonies” [9, p.9–10]. For Mattheson musical judgment was important, rather than the explanation of tones, intervals, through mathematical proportions. Likewise, the same question is present nowadays in energetics, which has its core from the idea of motion: “The characteristic quality of tones in music is change of various sorts: of location, frequency, amplitude, speed, duration, timbre density, complexity and so forth” [5, p.930]. Johann Mattheson in *Grundlage einer Ehren-Pforte* (Hamburg, 1740), p.230 states: “I am absolutely convinced that mathematics must be a servant and follower of music, and not the other way around, since mathematics is only a tool that belongs to things *in tantum*, not *in totum*. Music can thus not be a part of mathematics. On the contrary, mathematics is more properly a part of music, since its components and mechanisms are not the goal of music, but only various means”. In other words, Mattheson tried to escape from that pure mathematical elaboration, and to bring *sensus* [10] to the music and to compositional approaches as well.

Another theorist, Zarlino, was interested in some characteristics of the melody mentioned before — *figurenlehre*. Melody started to be analyzed from another perspective, on another level, where above all, the main concern was its structure. The theorist who has described meticulously all melodic figures is Joachim Burmeister, in *Musical Poetics* [11]. The idea was to segment the integral music line, in orders to identify specific motions, which could be rationally identified and after being understood, to be used in a specific context.

The next big step in music, that led to revision of music explanations and had a new impact to the music perception, is the counterpoint era. The new challenge had arisen due to the fact that two or more voices are dealing with a stronger implication of affective aspects. At the beginning, the most important was to classify harmonic intervals and what was noticed is their ability to increase and release the tension. Due to consonances and dissonances, harmonic sounds are able to awake a more strong reaction to the music, by possessing the feature to create and solve an imaginary conflict. This new approach of music explanation has become a problem of pedagogy as well. The main question was: “how to hear?” and “what is heard?”. Fux’s *Gradus ad parnasum* is the best illustration for this idea. While the previous theorists were intended primarily to teach composers, Fux’s explanations can be used by both, composers and listeners as well. Moreover, as a result, a larger horizon for music analysis and interpretation become possible.

Another significant step, which deeply changed the music elaboration, was the concept of tonality and harmony. In terms of perception, a huge, new revision brought a number of possibilities and required new explanations. Tonality appeared as “the ground” on which music has given a new life. In connection with the concept *tonalite*: “There have also been some basic theoretical disagreements about whether its constituent musical elements are melodies or harmonies: however narrow the definition given to the term, the domain of tonal music is enormous, diverse, and complex that one can choose almost any combination of musical phenomena and theoretical principles as the basis for discussion” [12, p.726]. An interesting perception is elaborated by Francois-Joseph Fétis, for whom theory and history assumed a commutative identity; each representing one leg of a larger dialectic synthesized by an ideal that Fétis termed *tonalite* [13, p.37]. He also conceptualizes four terms: *unitonique*, *transitonique*, *pluritonique* and *onitonique*. All these terms have the meaning that is far from modern perception of tonality. They are connected with a specific way the music sounds, and more exactly with some temporality. At the same time, the ground was prepared for the exploration of the harmony and recognition of chords, especially major and minor chords. The fundamental theorists of harmony are: Heinrich C. Koch, who has based his theory on *grundton* and overtones that creates the condition to realize the chords; and Jean-Philippe Rameau, who wrote two fundamental treaties that opened a new era for the music.

The most important moment in evolution of perception is that it always went along with musical changes, psychological changes, meanings, developments and so on, but, at the same time it was the foundation for both, theoretical or practical aspects, either speculations or concrete analysis. Nevertheless, the “forever question” remains open: do music theories, conceptualizations and classifications offer an explanation for learning, or due to perception, they represent only a variety of points of view from which anyone can choose what is more appropriate to fulfill an empty spot?

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