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Creative Music Processes as the "Object" of Otto Laske's Cognitive Musicology

Introduction

Otto Laske is one of the leading scholars in the area of Artificial Intelligence and Music. He is he founder of "Cognitive Musicology," which roots in such disciplines as musicology, philosophy, computer science, psychology, linguistics, semiotics, and sociology. Besides his research in and across these disciplines, Laske combined his research with his artistic activities: composition and writing of poetry. Such interdisciplinary and inter-artistic thinking was necessary to create the Cognitive Musicology, of which the main focus is on creative processes. Hereby, "acousmatic" was a central category in his early writings, which are based on research by Pierre Schaeffer. Occasionally, Laske used the term "acoulogical" as a synonym for "acousmatic" (Laske, 1993a: 226), which is defined as "the process of omitting a consideration of sound sources, whether acoustic or electronic, in order to focus on musical sound as heard by a human listener, that is as a sound object, *objet sonore*." (Ibid.)

This article will provide some biographical, artistic, and research background of Laske's theories to eventually explain the role of "acousmatic" in his early work (1970s) – which has yet to be fully interpreted and understood.

Laske's research cannot be separated from his various activities throughout his career and from his artistic activities. Therefore, this article is in three parts: it will provide some biographical notes, then give an overview of Laske's compositional work (which is central to his research), and finally focus on Laske interpretations and further developments of Pierre Schaffer's acoulogical performance model of music. Eventually, the article will show how Laske went beyond Schaeffer and created what is now known as "Cognitive Musicology."

Biographical Notes on Otto Laske

To include some biographical notes on Laske seems necessary in order to understand the conditions for the development of Cognitive Musicology. The (biographical) sequence of Laske's studies, positions he held, and his activities are closely related to his research and his artistic output.

Otto Ernst Laske was born on April 23, 1936, in Oels (Olesnica), Silesia. Together with his mother and sister, he escaped from the oncoming Soviet armee in 1945, which brought him to Lilienthal, near Bremen (Germany), the city in which his mother was born. There, he soon started playing the piano. At age 11, he met his father, who had been a prisoner of war in the Soviet Union; still in a war trauma, Laske tried himself in writing poetry from age 13 on. Although he temporarily interrupted his piano studies and, thus, his musical activities, he never lost the contact to the music, as his family was very music-loving.

After a social-science diploma at the business high school in Bremen (1955) and after one year of administrative work, Laske started studying business administration in Göttingen in 1956. There, stimulated by the Sociological Institute, he started research on sociology. This interest in sociology brought him to the Goethe University in Frankfurt/Main and the Institute for Social Research (Institut für Sozialforschung) with Max Horkheimer and Theodor W. Adorno. While he abandoned his business studies, his sociological interest led him to studying philosophy, which he started (after a second, classical high school diploma) in 1958. In addition, he studied musicology from 1960 on (with professors Helmuth Osthoff, Friedrich Gennrich, and Lothar Hoffmann-Erbrecht) as well as English and American Language and Literature from 1964 on. After intensive studies of Greek philosophy, especially supported by Bruno Liebrucks, Laske wrote his dissertation under the supervision of Theodor W. Adorno on the dialectics of Plato and the early Hegel, which he completed in 1966.

During his academic studies, specifically from 1961 on, Laske continued his music-practical studies, as he picked up composition and studied Hindemith's *Untersuchung im Tonsatz*. From

1963 to 1966, Laske studied composition primarily with Konrad Lechner: first, at the Frankfurt Musikhochschule and later at the Academy of Music in Darmstadt. Besides his studies with Lechner, who specifically continued the tradition of Guillaume de Machaut and Anton Webern, the Darmstadt Summer Courses were very stimulating for Laske's musical developments, where he met composers such as Stockhausen, Ligeti, Boulez, and Babbitt. In Darmstadt, he also met Gottfried Michael Koenig in 1964, which became most crucial for the development of Laske's composition theory and Cognitive Musicology.

After completing his dissertation, Laske was a Fulbright Scholar from 1966 to 1968 at the New England Conservatory in Boston (USA), where he graduated with a Master of Music degree in composition. He then gained teaching positions, each for one year, as visiting professor of philosophy in Ontario (Canada) and as visiting professor of musicology (specifically the music of the Middle Ages, the Renaissance, and the Baroque) at McGill University in Montreal (Canada). Invited by Koenig, Laske taught and studied at the Institute of Sonology in Utrecht (Netherlands) from 1970 to 1975. During the time period from 1971 to 1974, he was holding a fellowship from the Deutsche Forschungsgemeinschaft (German Research Foundation) for the project "The Logical Structure of a Generative Grammar of Music." Besides his collaborations with Koenig and Barry Truax, the training in a classical electronic studio became very important for Laske. Here, influenced by informal studies of computer science (1972–1974), he developed the foundations for his Cognitive Musicology.

After two additional years of studies (1975–1977) in psychology and computer science as a post-doctoral fellow at Carnegie Mellon University in Pittsburgh, Pennsylvania, and after completing a year as guest professor at the University of Illinois in Urbana (1978–1979), Otto Laske's research was extensively focused on Artificial Intelligence. He worked from 1980 through 1985 as software engineer and from 1986 through 1991 – especially in Switzerland, Germany, and The Netherlands – as a consultant for the development of expert systems. In addition, he was a guest professor of computer science for one year at Boston College in Chestnut Hill, Massachusetts. Already since 1984, he was more interested in the process, through which one gathers expert knowledge (to eventually create expert systems with that knowledge), than in programming.

From 1981 through 1991, Laske was – initially with Curtis Roads – artistic director of the New England Computer Music Association (NEWCOMP). During this time, he organized 65 concerts for mixed media and taught courses on computer-assisted composition in Stuttgart (1981), Darmstadt (1981), Boston (1981–1984) and Karlsruhe (1988/89). In 1992, he turned towards developmental and clinical psychology (Harvard University), to gain the theoretical basis for a theory of coaching. From 1996 to 1999, Laske studied clinical psychology at the Massachusetts School of Professional Psychology and received a Doctor of Psychology (Psy.D.) with his dissertation on "Transformative Effects of Coaching on Executives' Professional Agenda" (1999). He founded the consulting form Laske and Associates LLC (2000), and later the Interdevelopmental Institute (2004) – an institute for advanced coaching and cadre education.

His early German and his English poems were published in *Schlesische Spachschmiede*, 1955–1995 (München: K. Friedrich Verlag) and *Becoming What I See: Poetry*, 1985–1995 (in preparation). A Festschrift was published in recognition of his scholarly and compositional work (Tabor, 1999).

Annotations to Laske's Compositional Work

Laske's manifold scholarly activities and, thus, the development of his Cognitive Musicology, are hard to separate from his artistic work (composition as well as poetry), because composition theory is in the center of both areas. For that reason, a brief overview of Laske's compositional work shall be provided here.

Between 1964 and 1970, Otto Laske composed – under the influence of his teacher Konrad Lechner ("micro-counterpoint") and of Darmstadt (Stockhausen) and Renato de Grandis – only instrumental or vocal music *without* the computer. However, already his Two Piano Pieces (1967–69) were composed "top down," as later with Koenig's computer program "Project 1." Laske met Koenig in 1964 in Darmstadt, and most stimulating was a lecture by Koenig on composing with computers, which contained the main principles of what later became "Project 1." This program for interpretative composition is the one program to this day that is primarily used by Laske. During

the early 1970s, however, Koenig's programs had little practical, but strong theoretical influence on Laske. Influences regarding counterpoint came from Avram David (Boston), while Robert Cogan (Boston) developed Laske's understanding of musical form. Overall, however, Laske remained autodidact.

Laske's music of the 1970s was influenced by the classical electronic studio: electro-acoustic music was dominating. He mainly used Barry Truax' POD. Many other works were only influenced by the (thinking of the) way in which computer programs work (for instance, *Quatre Fascinants* for 3 Altos and 3 Tenors, with lyrics by Renee Char, 1971), but only *Perturbations* for flute, clarinet, violin, violoncello, piano, and 2 percussionists (1979) was completely composed using "Project 1." In the 1980s, Laske wrote music for tape as well as instrumental and vocal compositions, whereby "Project 1" was the synthetic program for all compositions. An "electronic turn" came about with *Furies and Voices* for loudspeakers (1989–1990) – for which he used PODX (granular synthesis), – since melodic-rhythmic configurations of the 1980s tape compositions were replaced by a focus on density and sound color. This development continued in the 1990s, in which compositions for tape dominate, which are based on his own poetry: for instance, *Treelink* (1992) or *Twin Sister* (1995). Here, for the first time, Laske composed – with the help of Kyma – "bottom up," starting with the sound material. For the Third String Quartet (1992–1996) and his *Organ Piece* (1998–1999), Laske used, for the first time, "Project 2," but he 'returned' to "Project 1" with *Trilogy* for tape (*Echo des Himmels, Erwachen, Ganymed*; 1999–2001). And although Laske used Cmask after 2001, he once more 'returned' to "Project 1" with his Symphony No. 2 (2003–2004).

Laske's instrumental works often show differentiated "soundcolor-counterpoint," which is also effective with vocal parts, while *a cappella*-works frequently show harmonic experiments. In tape compositions of the 1970s and 1990s, a primary interest in sound is dominating, while the tape compositions of the 1980s are rather contrapuntal. For Laske, music is primarily a lyrical expression, to which epic and dramatic elements are subordinate. His music is, it its variety, a personal expression *via* new, technical means. It strives for expression through constructions that are created rich of relations to sound and meter.

Otto Laske discovered a substantial change within composers who work with computers: a change from model-based to rule-based thinking, despite the motivation within the developmental tendency of musical thinking to return to model-based thinking.[1] While in traditional compositional practice, existing music is the basis – the model – of composing, there is a new category – besides "existing music" – in composing with computers: "possible music". The latter is music "that can be envisioned by a musical expert on the basis of an abstract set of rules, on which a computer program is based."[2] These abstract sets of rules may, hereby, lead to new musical forms and means of expression.

Laske distinguishes three ways of composing with computers: score synthesis, sound synthesis, and *musique concrete*.[3] While computers are used as the sound source for sound synthesis, and as the sound-transforming instrument for *musique concrete*, score data – such as pitch, duration, dynamics, etc. – are, in score synthesis, being generated ("synthesized"), via a computer program, which are then – as a result of interpretation – notated, or translated into data for an orchestral language. Thus, Laske uses score synthesis for notated music as well as for tape compositions, which are based on sound synthesis (instead of on sound transformations). Hereby, the most important step is the interpretation of numerical data that could lead to totally different results. Laske uses score synthesis via Koenig's programs "Project 1" and "Project 2." Since score-based music is a special kind of music within the electronic realm, it is nowadays often called "score based sampling" and associated with Laske's name.

Almost all of Laske's instrumental and vocal works composed after 1971 are created using score synthesis, while all compositions for tape of the 1980s are based on "top down score synthesis," using "Project 1." Laske's compositions are, to equal portions, music for loudspeakers and instrumental chamber music (including music for solo instruments). Several pieces for loudspeaker set his own poetry to music; he does not use lyrics by other poets for his electronic compositions. In addition, there are numerous pieces for solo voice and chamber ensemble or music *a cappell*a, of which six are based on his own poetry.

For Otto Laske, composing is closely related to his scholarly activities: "But I'm not interested in programs or machines that turn out compositions. Rather, what has always interested me are machine that allow and invite reflection about the compositional process and that simultaneously lead to a compositional product." (Laske, quoted in Schüler, 1999: 149.) In this sense, Laske's artistic activity is a part of his scholarly research. However, since 1990 the emphasis on theoretical aspects of computer programs decreased in favor of their use as the basis for compositional thinking.

Otto Laske's Early Concepts of Musical Problem Solving and the "Acousmatic"

As mentioned above, Otto Laske studied and taught at the Institute of Sonology in Utrecht (Netherlands) upon invitation of Gottfried Michael Koenig from 1970 through 1975, at first as a freelance composer and then, from 1971 through 1974, as a fellow of the Deutsche Forschungsgemeinschaft (DFG). The project that was supported by the DFG was "The Logical Structure of a Generative Musical Grammar." Between 1970 and 1974, Laske wrote several research reports on generative musical grammars and musical problem solving that have just recently been published for the first time (Laske, 2004). A "generative" grammar is, hereby, a grammar that proceeds from grammar rules to a musical language that is derived from these grammar rules (in terms of synthesis); in contrast, an "analytical" (traditional) grammar is a grammar that is being derived from existing musical structures themselves. Laske's research on generative grammars is based on Noam Chomsky's mathematical linguistics. It was Laske's idea to represent – in a formal way – a general musical competence adequately with regard to its methodology. It was his goal that the generative model can be applied to various musical models.

Most important in the early development of his theories was one of his essays from 1971: *On Problems of a Performance Model for Music*.[4] It is a methodological paper on the application of the theory of automata to the problems of musical communication. The "automaton" is defined as a formal language that is based on an alphabet and on rules; it produces symbols that can be part of a final state within the language. Such "communication" is based upon two different kinds of knowledge: (1) knowledge that relates to the structure of the automaton, which is called "competence"; and (2) knowledge that relates to the manner in which such competence is being used, which is called "performance." The latter kind of knowledge, thus, relates to the *process* of communication. With such distinction, Laske tried to develop a theory of musical communication that aims at the *process of using musical competence*. While it is the goal of such automaton (a computer program for composition) to produce – with limited, well-defined rules – an unlimited number of "output," it is the goal of the theory of such automata to examine the process of the production of such "output" (e. g. musical structures, compositions, or parts of compositions). This production of unlimited output is "creativity."

Laske's early essay *On Problems of a Performance Model for Music* is not only based on Noam Chomsky's theories, but also on those by George A. Miller (on structures on behavior; Miller, 1960) and those by Pierre Schaeffer (1966). While Schaeffer distinguished between "objets sonores" and "objets musicaux," his book (Schaeffer, 1966) essentially dealt with "objets sonores." Without considering sound sources, Schaeffer wanted to understand the sound itself: "objets sonores." The process of this phenomenological intention is called *acoulogie*. While Schaeffer, and so Laske, had realized that music theorists had always focused on notation and acousticians had focused on physical sound sources, nobody had focused on the sound itself, irrespective of its source / production and its notation. "*Acoulogie* deals with ideas, the mental shaping of sound, and thus with listening, not hearing. Now, this approach followed Husserl's phenomenological reduction, where one only deals with the mental object, regardless of its objective existence, which in our case is the sound. Schaeffer put the actual sounds 'into brackets' (*epoché*). He aimed to understand the human *intention d'entendre* as a basis of a theory of listening, going beyond a mere theory of perception." (Laske, quoted in Schüler, 1999: 137–138.) Listening is a complex process that entails mental imagination and representation, and, therefore, problem solving. Thus, the initial focus on the acousmatic (in Laske's research synonymously used with "acoulogic") led Laske to go much beyond Schaeffer's types and classes of objets sonores and his speculations on the process of listening; as a result, Laske provided the basis for the development of theories of

musical problem solving and, eventually, a theory of musicality. "The part of the received-music domain that falls under grammatical constraints is referred to as the domain of sonology. Sonology is both a grammatical and a strategical, that is, problem solving theory of musical listening. Where sonology goes beyond both the grammatical and performance domain, it is a theory of auditory imagination forming part of epistemology and aesthetics. In terms of a grammar for music, sonology is a theory of the sonological component of a grammar forming an integrated componential structure with the syntactic and the semantic component of the grammar; while in terms of problem solving, it is a field that investigates sound and the perception of sound, leading to the design and testing of performance models for music, that is, of models of specific activities such as composition, listening, and others." (Laske, 1993a: 217)

Laske recognized that the acoulogical model of listening as Pierre Schaeffer had developed it was neither *formal* (i.e. investigating only the order and function of parts of musical activities) nor *explicit* (i.e. instructions that would enable the generation of the musical activity); however, Schaeffer's model made use of competence. The lack of this model was that it did not distinguish between competence and performance. Schaeffer, as expressed in his acoulogical model, assumed that musical creativity relies on performance, not on competence. It was Laske's achievement to realize the relationship between performance and competence, and that the three main components of competence – syntactical, sonological, and semantical – should not be ignored or misconstrued. While Schaeffer's two types of recognition – *entendre* and *comprendre* – were acousmatical, abstracting from sound production and from sound sources and thus dealing "with independent structures independently of their physical measurability" (Laske, 1971b: 36), Laske's search for musicality was sonological in nature, showing the relationship between sound objects and possible syntactical configurations. Laske's model went beyond the pure acoulogical one in that it was concerned with the relationship between the acoustical, sonic[5], and syntactical realms of music. Thus, Laske's sonological research contained references to grammatical components that Schaeffer's *acoulogie* ignored. Laske pointed out that "even for purely sonological purposes – such as comprehending simple intervals or some perceptual quality of a sound sequence – a knowledge of the psycho-acoustic features of a set of sounds is insufficient. The indeterminacy of the acoustic domain indeed seems to be a fundamental property of musical sound, just as is the case for human speech sounds. We can conclude from this indeterminacy that only by taking music-syntactic and music-semantic information into account can a human listener comprehend sound configurations..." (Laske, 1974: 36)

Final Remarks

As mentioned earlier, Laske's manifold scholarly activities and, thus, the development of his "Cognitive Musicology," are hard to separate from his artistic work (composition as well as poetry), because composition theory is in the center of both areas. The research on musical processes is hereby of special importance, because musical processes can be modeled procedurally via computer programs. And it is no surprise that composition knowledge is the starting point of this research for several reasons: first, musical communication begins with the *activity* of composing (or improvising); second, Laske was unhappy with his own *hidden* compositional knowledge; and third, up to the 1970s the explication of musical knowledge was only informal, instead of explicit through computer programs, and even computer programs for algorithmic composition offered only an incomplete representation of musical knowledge.

Especially with his work in the area of expert systems, Laske realized that much more flexible systems of the representation of musical knowledge are possible. He expanded his methodological approach with regards to the search for a theory of musicality in the broadest sense. Therefore, the goal of this Cognitive Musicology is to create models of musical intelligence, to develop an empirically based theory of musical intelligence. The computer is the most important tool to formulate theories of musical activities that are empirically verifiable. Hereby, musical competence and performance (activity) as well as musical artifacts are going to be examined in their polarity, which means that the examination of musical artifacts has to occur not only in themselves, but also with regards to its underlying competence and performance. Music will be designed as a series of *tasks*, of which cognitive structure and processes are to be explored. To have developed such a

methodology is the result of Laske's research in linguistics, but especially in psychology, computer science, and Artificial Intelligence. Music is understood as a cognitive achievement, which requires – in order to understand it – a structural as well as procedural analysis of tasks. For instance, reading and analyzing a specific score by conductors, musicologists, historians, and music theorists are different tasks (performance), although they all require a common musical competence. From this perspective, even musicology itself becomes a task, and the research on its structure and its process is a goal of Cognitive Musicology.

References

Laske, Otto. 1971a. *On Problems of a Performance Model for Music*. Utrecht, The Netherlands: Institute of Sonology.

Laske, Otto. 1971b. "An Acoulogical Performance Model for Music," *Electronic Music Reports* 4 (September 1971): 31–64.

Laske, Otto. 1974. "Musical Acoustics (Sonology): A Questionable Science Reconsidered," *Numus West* 6 (1974): 35–40.

Laske, Otto. 1975. "Towards a Theory of Musical Cognition," *Interface* 4/2 (1975): 147–208.

Laske, Otto. 1977. *Music, Memory and Thought: Explorations in Cognitive Musicology*, Ann Arbor: UMI.

Laske, Otto. 1986. "Toward a Computational Theory of Musical Listening," *Communication and Cognition* 18/4 (1986): 363–392.

Laske, Otto. 1989a. "Introduction to Cognitive Musicology," *The Journal of Musicological Research* 9/1 (1989): 1–22.

Laske, Otto. 1989b. "Composition Theory in Koenig's Project One and Project Two," *The Music Machine: Selected Readings from 'Computer Music Journal'*, ed. by Curtis Roads. Cambridge, MA: The MIT Press, pp. 119–130.

Laske, Otto. 1989c. "Composition Theory: An Enrichment of Music Theory," *Interface* 18/1–2 (1989): 45–59.

Laske, Otto. 1993a. "A Search for a Theory of Musicality," *Languages of Design* 1 (1993): 209–228.

Laske, Otto. 1993b. "An Epistemic Approach to Musicology," *Music Processing*, ed. by G. Haus, Madison, WI: A–R Editions, pp. 109–118.

Laske, Otto. 1993c. "Mindware and Software: Can they Meet?" *Proceedings of the International Workshop on Knowledge Technology in the Arts*, Osaka 1993, pp. 1–18.

Laske, Otto. 2004. *Musikalische Grammatik und Musikalisches Problemlösen: Utrechter Schriften (1970–1974)*, ed. by Nico Schüler. Frankfurt/Main: Peter Lang.

Miller, George A. 1960. *Plans and the Structure of Behavior*. New York: Holt.

Schaeffer, Pierre. 1966. *Traité des Objets Musicaux*. Paris: Seuil.

Schüler, Nico. 1995. *Erkenntnistheorie, Musikwissenschaft, Künstliche Intelligenz und der Prozeß: Ein Gespräch mit Otto Laske*. Peenemünde: Dietrich.

Schüler, Nico. 1997. "Otto Laske," *Komponisten der Gegenwart*, ed. by Hanns-Werner Heister und Walter-Wolfgang Sparrer. München: edition text+kritik, 11. Nachlieferung, 1997, 2 pp.

Schüler, Nico. 1999. "A Composer's Cognitive Musicology," *Otto Laske: Navigating New Musical Horizons*, ed. by Jerry Tabor. Westport, CT: Greenwood Press, pp. 136–150.

Schüler, Nico. 2003. "Otto E. Laske," *Die Musik in Geschichte und Gegenwart*, ed. by Ludwig Finscher, Personenteil vol. 10. Kassel: Bärenreiter, pp. 1235–1237.

Tabor, Jerry (Ed.). 1999. *Otto Laske: Navigating New Musical Horizons*, Westport, CT: Greenwood Press.

Notes

[1] See especially Laske's unpublished manuscript on "Die Integration neuer Technologien in die Denkweisen des Musikers," 1989, p. 3.

[2] Ibid. The original reads: [Musik] "die sich aufgrund einer abstrakten, in einem Computerprogramm niedergelegten Regelmenge von einem musikalischen Experten imaginieren läßt."

[3] See Otto Laske's unpublished manuscript "Sieben Antworten auf sieben Fragen von N. Schüler," 1994.

[4] This essay was originally published in English as Laske 1971a. Its German translation can be found in Laske, 2004, pp. 35–85.

[5] "Sonic" properties are asyntactical as well as acousmatical. They "are thus intermediary in relation to the acoustical and sonological realms. Although equally acousmatical, sonological criteria stand in definable relations to syntactical features." (Laske, 1971b: 40)

Santrauka

Muzikos komponavimo procesas – Otto Laske's kognityviosios muzikologijos „objektas"

Pagrindinis O. Laske's kognityviosios muzikologijos objektas yra kūrybiniai (specifiniai muzikos komponavimo) ir bendrieji muzikiniai procesai. Jo muzikologinius tyrimus sunku atskirti nuo jo meninės – kompozitoriaus ir poeto – veiklos. Nors Laske garsėja kaip kognityviosios muzikologijos kūrėjas, jo darbai dar nėra labai plačiai žinomi. Šiame pranešime detaliau supažindinama su Laske's kognityviąja muzikologija ir jo muzikinių procesų tyrinėjimais.

Laske teigė, kad muzikinius procesus gali imituoti kompiuterinės programos, kurių veikimas yra panašus į tradicinius muzikinius procesus, taigi gali būti vienodai sėkmingas arba nesėkmingas. Pagrindinis jo tyrimo objektas yra komponavimo procesas. Laske vienas iš pirmųjų sudarė kompiuterines komponavimo programas, imituojančias tradicinius komponavimo procesus. Šiame pranešime, kuriame ypatingas dėmesys atkreipiamas į kelis jo ankstyvuosius (1970–1974) dar nepublikuotus darbus (juos spaudai šiuo metu rengia pranešimo autorius), pirmąkart išsamiai nagrinėjama O. Laske's sukurta muzikos teorija.

Būdamas filosofas, Laske domisi muzikiniais procesais kaip epistemologine problema: muzikinė *veikla* yra muzikinio bendravimo proceso išeities taškas. Tyrinėdamas kompiuterines sistemas, jis padarė išvadą, kad muzikos mokslui gali atstovauti daug lankstesnės sistemos nei tos, kurias siūlo tradicinė muzikologija, ir šiomis įžvalgomis jis išplėtė savo metodologinius tyrinėjimus, siekdamas sukurti bendrą muzikalumo teoriją. Jo kognityviosios muzikologijos tikslas – sukurti muzikinio intelekto modelius, pagrįstus empiriniais tyrinėjimais. Ši metodologija – tai Laske's muzikologinių, lingvistinių, psichologinių, kompiuterinių ir dirbtinio intelekto tyrinėjimų rezultatas.