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A musical gesture – between theory and experience

*description of an artistic work constituting jointly with the artistic work a PhD
dissertation within of the procedure for granting the PhD degree in the field of arts, in
the artistic discipline: musical arts*

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A list of text blocks concerning the application of theoretical considerations in an artistic work:

„To see a World in a Grain of Sand

And a Heaven in a Wild Flower

Hold Infinity in the palm of your hand

And Eternity in an hour (…)".

„Zobaczyć świat w ziarenku piasku,

Niebiosa w jednym kwiecie z lasu.

W ściśniętej dłoni zamknąć bezmiar,

W godzinie — nieskończoność czasu (…)".

William Blake (1757-1827), *Auguries of Innocence* (1789).[1]

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[1] W. Blake, *Poezje wybrane*, transl. Z. Kubiak, Warszawa, 1972.

Preface

The category of gesture is becoming an increasingly important element in theoretical and practical reflection on music, although it is already a constant feature in the language of its description. Apart from the above statement, however, everything else is not certain. This concept, commonly used, is almost never explicitly defined or specified. Sometimes excessive use at every opportunity, both in theoretical works and in compositional statements, resembles the phraseological expression of a conceptually and perceptually empty gesture, containing no message, aiming at nowhere[2]. The opposite attitude is also observed. Some scholars emphasize that a gesture is something so intuitively important that it cannot actually be used in the description of any given work. This attitude is part of a broader conviction that respectable concepts or complexes of concepts, established in the current research practice, are fully sufficient for an exhaustive description of the nature of the sound phenomena present in the work. In these cases, the notion of gesture is seen as redundant. Other commentators, on the contrary, speak of this concept directly as *tertium comparationis*. This creates a situation of a fluid, dialectical mosaic of an ephemeral character.

A musical gesture does not have its own single, specific, fixed meaning in the musical environment. It is contextually individual. Every composer, theoretician, conductor, rhythmist, music educator, instrument builder, instrumentalist creates their own understanding of gesture for their own needs. The concept is often non-committal or even informal, based on environmental observation, imitation of colleagues, authorities, overheard judgments, and the context of use plays a significant role in determining its semantic scope. The only common points of these different understandings are the words "movement" ("motion"), "communication", and sometimes "meaning". Thus, according to Skórzyńska Czapliński, it is a situation of convolution[3], opposed to the determination of all "-isms", and

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[2] Rewiewing *Music Grove Online*: *The Oxford Dictionary of Music* i *The Oxford Companion to Music.* However, as many as 910 entries in the encyclopedia contain the above phrase, both in entries relating to composers and those relating to musical styles (including national and cultural ones), musical genres (including especially opera), and even techniques and trends. The contexts used there definitely overlap in their scope with the dialectical, dogmatic-hermeneutic dispute presented in this work. The gesture is seen both inside and outside the work (here, for example, the entry "Adorno", but also "Filming", "Videotaping"), as a materialistic, but also idealistic, sonic and performative formula (here, for example, the phrase " "Gesture-derived" Figures in the entry "Jazz", "Piano" in the same entry, as well as other uses in the entries "Haptics", "Tāla", "Krakowiak", or "Music Theater") as a semantic and sensual concept, is used in the context of events-actions and process formations. In other words, this is a practical confirmation of the lack of a uniform interpretation of the issue. At the same time, there is already confirmation of certain theses and hypotheses presented in this work, including the practical application of this concept to music from various cultural and civilizational circles and various styles and trends (e.g. the slogan "Sturm und Drang"), genres, periods (e.g. in the entries "Frescobaldi", "Dvořák" and "Furrer", but, interestingly, never in the case of the entry "Grisey"). [source:] https://www.oxfordmusiconline.com/grovemusic/ [accesed: 01.05.2023].
[3] A. Skórzyńska, *Praxis i miasto. Ćwiczenie z kulturowych badań angażujących*, Warszawa, 2017, p. 7.

opening up to necessarily transdisciplinary studies of both the ontology of the phenomenon and a set of specific practices, including, what is particularly important, also my own.

This description accompanies the artistic work, a sound spectacle *visibilium et invisibilium for* orchestra, a amateurs ensemble, light, dance, audio- and video-playback, comes from the above source. This work is a summary of a certain stage of my path as a composer, correlated with the research goals given below.

(1) An attempt to understand what a gesture actually is, i.e. what its essence is, from my subjective perspective, and at the same time to refer to the positions already established in this field. **The aim is therefore to search for a flexible, capacious and useful definition of a musical gesture**.

(2) An attempt to examine the objectified layers of musical gestures in order to determine to what extent gesture is a universal phenomenon and to what extent it is local, and to what extent it can be applied to works of various provenances, periods, and even civilisational circles. **The aim is therefore to seek an answer to the question of how the musical gesture is a tool for effective communication**.

(3) An attempt to find those moments in the history of music that clearly show and thus confirm my own conviction that the gestural understanding of sound structures as certain synthetic wholes, and not only phenomena subordinated to particular parameters, e.g. rhythm, harmony, instrumental theatre – is not an achievement of the 20th or 21st century, but has its much older roots. **The aim is therefore to confirm the intuition that the understanding of musical gestures developed long before their theoretical codification**.

(4) An attempt to describe the hierarchy and function of gestures in the system of the musical work. **Therefore, the aim is to select a method of gesture analysis for the widest possible range of musical works along with its practical application**.

The research work within the framework of these preliminary assumptions is based primarily on the most basic and appropriate for the scientific method strict analysis and discussion of the available, source (especially in the field of hermeneutics) state of arts. The second important pillar of the work is the observational method, i.e. the recording and analysis of cultural products, thanks to which the practical, compositional scope of the concept of gesture can be detailed, as well as the scheme of its internal relations and dependencies resulting from it. The picture obtained in this way is complemented by conclusions drawn from statistical research conducted for my own use, which in this

dissertation is only signalled. During these research, I have conducted and still conduct a number of individual consultations in the Poznań music community. I ask specialists in various fields of music, i.e. composers, theoreticians, rhythmists, educators, instrumentalists, conductors, etc., the same questions in terms of their understanding of the "musical gesture", especially in the area of their musical activity. Thanks to these interviews, I have gained a complex and ambiguous picture of the scope of the meaning of this concept, on the basis of which the horizon of my own observations has broadened.

Due to my research goals, while taking into account the multi-layered nature of the phenomenon under study, in order to fully illustrate it, I accept **the necessity of a transdisciplinary approach**. This assumption is expressed in the thought of Johann Gottfried von Herder, which is a kind of leitmotif of this work. His ideas in the field of acoustics (perceiving sound phenomena as synthetic, inseparable complexes oriented to perception), cognitive reflection (theory of thought and cognition), semiotic reflection (theory of translation), as well as the avoidance of rigid systematization are very important to me. The above assumptions led to other, as it were, logically necessary methodological decisions, thanks to which I outlined my own, deliberately semi-open approach to the concept of gesture, perhaps balancing on the verge of methodological eclecticism, but taking into account the possibility of a diverse understanding of this phenomenon. These considerations made it necessary to take into account a variety of theories in this dissertation, including semiotic (infinite semiosis, intersemiotic translation, generative grammar, sign theory), philosophical and cultural studies (relational ontologies, structural and constructivist theories, idealistic, realistic and materialist ontologies), cinema theory (audio-vision), pedagogy (effective surprise), and some manifestos of compositional currents.

The state of arts about gestures available today is very rich, although scattered and almost exclusively foreign-language. This dissertation is probably the first Polish-language synthesis in this area. Since the creation of my master's thesis in 2020, the literature on the subject has continued to be defined by three publications different in terms of understanding and understanding musical gestures: *Interpreting Musical Gestures, Topics, and Tropes: Mozart, Beethoven, Schubert* by Robert S. Hatten, *Musical Gestures: Sound, Movement, and Meaning* edited by Rolf Inge Godøy and Marc Leman, and *The Topos of Music III: Gestures, The musical Multiverse Ontologies* edited by Guerino Mazzoli.

The above-mentioned works do not always express directly the references contained in them to the definition of the gesture of Hugues de Saint-Victor or to definitions similar in some of their philosophical and aesthetic aspects. Despite this common basis, however, they show different ways of understanding and approaching the use of the musical gesture in

terms of the attitude towards the semiotic and sensual nature of the gesture. They also have different accents and references to the latest trends or technologies. The views of the authors of the above publications are presented in this dissertation to the extent that they are necessary to illustrate the diversity of attitudes towards the studied phenomenon and, above all, to find answers to the research questions posed. As far as the literature on the subject is concerned, I can see the proliferation, especially in French-speaking circles, of thematic conferences, the aftermath of which are extensive post-conference publications. Among them, the publication edited by Marcelo Wanderley and Marc Battier *Trends in Gestural Control of Music*, published by IRCAM in 2000, is of particular importance to me. In addition, there are many small articles (including the so-called *proceedings*) devoted to specific applications of gesture in creative practice.

The following **dissertation consists of four chapters**. The first chapter, historical-dogmatic, concerns the movement of sounds as a category introducing a musical gesture, together with strategies for its aesthetic interpretation and a reflection on the universal perception of the movement (motion) of sounds as a naturalized cultural category. The subject of the second, dogmatic chapter of the dissertation is a review of the most important concepts and perspectives of understanding the musical gesture. The third chapter is devoted to an attempt to reconstruct the structure of the gesture: its subject, object, space and functional levels. It also contains an my own attempt to define the phenomenon and put forward some hypotheses, as well as a reference to other, already established notions of research nomenclature and an enumeration of the manifestations of gesture in the history of music. The fourth chapter is a synthesis of theoretical considerations in practice, i.e. through the analysis of Arvo Pärt's *Cantus in Memory of Benjamin Britten* carried out in terms of revealing various gestural aspects in the work. A brief conclusion discusses the observations of the dissertation.

The summaries and creative applications of the theoretical content in the main text are references to the my own artistic work *visibilium et invisibilium*, made locally and contextually, i.e. the order of the discussed layers of the musical work results from the order of the theoretical issues raised. These references are distinguished by the use of a gray background for the text. Such a structural solution allows me to visualize the influence of theoretical considerations on the shape of the aforementioned work, as well as the influence of my own compositional practice on the formation of my own theoretical reflection.

What I do and want to do as a composer is to shape my own creative skills using various forms consistent with my personal understanding of musical gestures. By this I mean an attitude that does not assume the primacy of technique, form, or harmonic system, but

each time **starting from a specific gesture, allows me to construct and select on its basis and in connection with it a coherent universe of means necessary to construct a work**. For this reason, it is to the gesture that I devoted my master's thesis, and now also to the following dissertation accompanying my artistic doctoral artistic work, and the hermeneutic and research processes presented in it have led to observations that have given me a better understanding of my work and what I want to convey in and through sound. This work is therefore a form of practical theory, an attempt to present my own, synthetic approach to the problem, and not to take a hard methodological position. I consider such a position to be erroneous in this matter due to the current multitude of sometimes extremely contradictory research or compositional practices, in which, consciously or unconsciously, theory is intertwined with own practice.

I started working on the sound spectacle *visibilium et invisibilium* with the awareness that I wanted it to be a piece in which the main idea that organizes all layers is a musical gesture. In this sense, my research work consisted in the practical implementation of "thinking with gestures" at various levels of compositional technique, often in the form of an experiment, the effects of which I verified only during the premiere of theartistic work (which, by the way, is also a research method in itself). An extensive description is the basis of this process, it reveals my reasoning and intuitions, from which the accepted research hypotheses are derived, and in particular the central hypothesis indicated above, subject to creative transformations in the structure and matter of the work. In this way, both equal factors, i.e. (1) extensive **theoretical reflection** applied in (2) **practical solutions**, together constitute elements of my compositional technique, and at the same time are embedded in a broader theoretical context and in compositional practice.

"(...) Even wandering around some undeciphered phenomenon, impossible to fully understand, but wandering closer, sensing, guessing – has its own deep meaning."[4] Writing a dissertation devoted to musical gestures, I have a feeling that every theorem or hypothesis that will be included in the following text should contain a footnote to this very sentence by Witold Lutosławski: on the one hand, it is comforting and encouraging to research, and on the other hand, it is a warning against falling into the "theory of everything". Whatever is written about music is basically a flat ontology, a relation suspended and existing only for the sake of creative sonic orders. By expressing musical content in a linguistic sentence or a

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[4] B. Pociej, *Lutosławski a wartość muzyki*, Kraków, 1976, p. 133. [translation after Lutosławski done by myself]

logical expression, one flattens out what can be experienced, intuited, known and understood without shorthand or limitation "with the gaze of the mind with a strange speed".[5]

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[5] Tomasz z Akwinu, *Suma Teologiczna, Suppl., q. 87-101: Rzeczy ostateczne*, t. 34, transl. P. Bełch, Londyn, 1986, Q. 88, a. 2, p. 19. [translation after Bełch done by myself]

1. The movement (motion) of sounds as an acoustic category and a naturalized cultural category introducing a musical gesture

1.1. The process of naturalization of cultural categories as a social and cultural framework for the identification of sound perception with movement

"So what of these ideas can music really recreate? Again, movement."[6]

In order to understand the phenomenon of the identification of the perception of sound in relation to movement in all its original complexity, one must first take a kind of mental journey into the past of aesthetic thought, until 1854, when the young Eduard Hanslick in his *Vom Musikalisch-Schönen* rebelliously wrote about "Tonend Bewegte Formen", i.e. **"sound forms in motion"**[7] (or, picturesquely, though less precisely translated, "forms sounding in motion"[8] or "forms of sound of movement"). At that time, the entirety of his discourse focused on a deep critique of the "programmatic" attitude, i.e. one that inscribed in the musical work as its structural components significant and weighty non-sonic elements. At the same time, Hanslick was looking for the independence of musical narration expressed in the spirit of this sounding in motion through sound structures. Nevertheless, his attitude was probably the first to emphatically synthesize much older intuitions and positions.

I'll dwell for a moment on Hanslick's thought, which is very interesting, complex and far-reaching. It can be said that it rejects one type of metaphor in favor of another: while definitively ruling out the possibility that the musical structure expresses (reproduces) external feelings, the author is at the same time content to assert that the musical structure expresses (reproduces) movement, which can be identified either with some unnamed inner feelings that are contained only in music, or with one of the elements that make up the feeling. Along which the line of the iconic projection runs, and such a component is supposed to be the movement. Hanslick suggests, however, that the extra-sonic feelings in the musical work and in the aesthetic experience are in the same relation to the actually existing feelings as the one that really exists with the one immortalized in the painting, which is a projection of the artist's fantasy[9]. The philosopher himself says that it is a relation of immanence to

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[6] E. Hanslick, *O pięknie w muzyce*, transl. S. Niewiadomski, Warszawa, 1903, p. 39. Nb. At the same time, Hanslick confirms that this idea, "The content of music [-] are sounds arranged in a certain form and set in motion" (my translation after Niewiadomski), or to translate more loosely, "The content of music is sound forms in motion." *Cf.* Ibid., pp. 73-74.
[7] Ibid. from now on, all underlinings are mine.
[8] Translation proposal by Mikołaj Rykowski.
[9] K. Guczalski, *Czy Eduard Hanslick był formalistą?*, [w:] K. Lipka (red.), *Muzyka i filozofia I, Refleksje, konteksty, interpretacje*, Warszawa, 2017, p. 38.

transcendence[10], in a word, music is supposed to express its own "emotions", existing only in itself and in its own way, i.e. this choreographic sounding in movement. Despite the seemingly contradictory nature of this dialectic, Hanslick does not deny the existence of these "emotions", but he essentially excludes them from the group of comparative criteria (external to internal, actually existing to fanciful, marking and signifying), contenting himself with contemplating in aesthetic experience the reflection of the meandering of the internal stream of sounds (as *élan vital* of the musical work), so impossible to fully and adequately describe.

This understanding of content in the work and in aesthetic experience provoked the philosopher's specification of these *tönende Bewegungen*: in this " they resemble architecture or dance, and in particular the beautiful relation of their lines or movements, devoid of any other content ".[11] And yet, what comes to the surface of such a perspective is the fact that qualitative description, and often the understanding of sound structure, its development, the creation of larger narrative or dramaturgical sections as sound forms in motion (movement, which Hanslick saw as a contrapuntal, harmonic, textural succession),[12] always reveals **an intuition about non-sonic systems of their organization**. They are built on the basis of basic human sensory and psychic experiences, such as sense (symmetry or chaos, tension, relaxation, ascent, descent, building a certain state, striving "from", striving "towards", duration or rest, achieving fulfillment, procrastination or entropy) or sensations (purposefulness, mood, atmosphere). Although, according to Hanslick's intuition, these indicators will certainly not be an explicit feeling (the feeling itself), we can talk about them as very specific and often complex qualities of movement, or at least its perception. For Hanslick, this movement is the only thing that remains of the non-sonic content, and it is possible to transfer it into the grid of sound contexts.

Tonend Bewegte Formen, although it is at the very heart of the concept of musical absolutism, in my opinion makes it impossible to deny the "figurative" value of the musical course, which is at the same time a direct reference to human experience. Hanslick's theory is one of those moments in history in which the sense of the connection between music and movement is manifested in full force: its dynamics, intensity (density), processuality,

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[10] E. Hanslick, *op. cit.*, p. 81-82.
[11] *Ibid.*, s. 204. [translation after Niewiadomski done by myself]
[12] The authors commenting on Hanslick point out that this statement can also be interpreted as recognizing the adaptive power of forms (here in the case of the sonata form and the sonata cycle). The forms would not be rigid prefabricated elements, but rather perceptual patterns, opening up to creative and expressive individualism. Basically, Hanslick's position, in all its novelty and innovativeness, can be reduced to sensitivity to the understanding of form in close dependence on the ways of listening. According to Hanslick, the aesthetic, formal understanding of a work is rooted in conscious, perceptually oriented listening.

intention. At the same time, the philosopher's thought is an opt for a specific, culturally constituted form of this belief (to which I will return later).

> "The specific mapping chosen within a tradition of discourse about music reflects not so much absolute musical structure as it does the broader cultural practice within which music and its understanding are embedded: mappings reflect the conceptual models that are important to culture. The cross-domain mappings employed by any theory of music are thus more than simple curiosities — they are actually key to understanding music as a rich cultural product that both constructs and is constructed by cultural experience.[13]

The belief in the identification or at least the perception of music in relation to a certain kind of movement, and at the same time the constant reference of this movement to its various types of extra-sonic qualities (especially understood as the meaning: the course of thought or as the displacement of contexts) can in principle be considered **a naturalized cultural category**, with the cultural category being presented as a binary relation, where "X culturally (socially) creates Y"[14]. That is to say, a category is created in culture that is so certain and obvious that it is essentially indisputable (which does not mean that it is not internally or externally contradictory).[15] This category begins to function as a not necessarily conscious biological fact and is treated as a part of a hard reality in which its human origin founded in the perceptual apparatus has already been forgotten. The study of this association is a search for emerging historical communities of meaning. In the case of a musical gesture, such a community is certainly the movement of sounds, the syntheticism of psychoacoustic experience, and two equally legitimate hermeneutics of their explanation: sensual and symbolic.

With regard to the problem of naturalization, the concept of **enculturation** should also be introduced, which Krzysztof Moraczewski defines as "(...) In the first place, it is not the acquisition of conceptual knowledge, but the formation of perceptual habits, ways of hearing;

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[13] L. M. Zbikowski, *Conceptualizing Music*, Oxford, 2004, p. 72. *Cf.* Translation in: E. Schreiber, *Muzyka wobec doświadczeń przestrzeni i ruchu – między metaforą pojęciową a percepcyjną*, [in:] *Sztuka i filozofia*, 40, 2021, p. 109.
[14] R. Mallon, [entry] *Naturalistic Approaches to Social Construction*, section nr 1 *What is Social Construction?*, [in:] E. N. Zalta (ed.), *The Stanford Encyclopedia of Philosophy*, summer 2022. [source:] https://plato.stanford.edu/entries/social-construction-naturalistic/ [accesed: 01.05.2023].
[15] *Cf.* „The very notion that tonality is natural is itself an illusion. Tonality did not exist from the outset. It established itself in the course of a laborious process which lasted far longer than the few centuries during which the hegemony of major and minor has prevailed. The music that preceded it, the Florentine Ars Nova, for example, is just as unnatural and just as alien to contemporary ears, as are the works of the late Webern or Stockhausen in the proud ears of the normal listener. The semblance of naturalness which serves to disguise historical relations inescapably attaches itself to the mind that insists that the rule of reason is unimpaired while surrounded by a world full of persistent irrationality." T. W. Adorno, *Music and New Music*, [w:] *Idem, Quasi Una Fantasia. Essays on Modern Music*, transl. R. Livingstone, Londyn, Nowy Jork, 2011, p. 263.

so to speak: structuring the capacity for *aisthesis*[16]. This is an experience well known to ethnomusicologists who, in the study of the music of foreign cultures, encounter precisely a perceptual rather than a conceptual threshold resulting from different enculturations."[17] Enculturation is thus a form of individual or group *ex post* adaptation, "tuning", "tempering" to the aforementioned perceptual thresholds, the opposite of the processes of naturalization, which "impersonally", thoroughly and so strongly shape perceptual-conceptual thresholds that they are applied from that moment on reflexively, as if ahistorically, and thus retroactively. Naturalization processes have taken place in various forms and scopes within different cultures, but they have as a common basis the metaphorical description of sensory sound experiences.

I see confirmation of my intuition about the perceptual-aesthetic nature of the naturalization of perceiving sound structures as motor in neurocognitive and anthropological couplings with music theory, especially in one of their early manifestations, which is Alexander Truslit's experiment of 1938[18]. It was based on the use of similar musical competences in the field of music theory, composition, harmony and counterpoint of two participants. The first was tasked with mapping a graphic diagram of "movement" (abstract, expressive serpentines drawn by himself) in the musical succession of sounds through the act of composing a melody. The second participant, on the basis of an auditory analysis of the melody composed by the other participant, had to draw its graphic curve according to his or her imagination.

The comparison of the results showed the similarity of the curves drawn by both the creator and the recipient, which are confusingly similar to each other. Due to the fact that both participants were very well acquainted with Truslit's theory of musical movement – both harmonic, melodic, rhythmic, etc. – and judging by the curves of the plotted melodies, one can suspect that they were also musically educated, i.e. familiar with harmony, counterpoint, and moreover moved fluently within the conventions and aesthetics of their period and environment – a mutually understandable metamusical symbolism of the noted structures could not be ruled out. The aim of the experiment was achieved by confirming the observation that a certain kind of movement communication in music is possible, and the reference to it itself is understandable and indelible.

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[16] *αἴσθησῐς [aísthēsis]*.
[17] K. Moraczewski, *Muzyczna złożoność i pewna specyficzna forma doświadczenia estetycznego*, [in:] *Fenomen wieczności. Zeszyty naukowe Centrum Badań im. Edyty Stein*, no 15, Poznań, 2016, p. 299.
[18] More: B. H. Repp, *Music as Motion: a Synopsis of Alexander Truslit's (1938) 'Gestaltung und Bewegung in der Musik'*, [in:] *Psychology of Music*, vol. 21, no 1, 1993, pp. 265–278.

However, there are arguments that undermine the sense of the aforementioned experiment and others like it, namely that the participants have a similar level of musical competence. Automated reflexes, mediated by the mental reconstruction of the movement of the hand drawing the shape (as a result of the action, a kind of "connection of the dots", which in the following part of the dissertation will be described as the "engine" of motor imagery, embodied cognition), require many years of professional training, so they would not have any universal value. Being aware of these shortcomings, to this day numerous similar attempts are carried out on various social, professional and cultural groups, attempts based on the search for communities of experience and communication[19].

Lawrence Zbikowski writes about **mapping between domains** as conceptual analogies between concrete and known spatio-temporal sensations and perceptions, and musical sensations and perceptions that are purely abstract and unknown[20]. They contradict the reflexes of dictionaries of *lege artis* description, which do not illuminate the ontological qualities of phenomena and, ignoring the question: "What is it?" or "Why is it?", but describes only the purely technical aspect of their expression, e.g. in a musical work and the resulting effects, focusing on the question: "How is it (made)?".

The description and perception of musical phenomena, especially pitch-oriented, is treated in the Western cultural circle very comprehensively, because it focuses both on the experience of changes of position in Euclidean space (dimentions; higher, lower, farther, closer), physical size (large, small), the category of human age (birth, aging, dying) or even certain categories of a social or feudal nature (perceiving certain musical styles as legitimate while at the same time a conceptual and perceptual refusal to recognize others as such, because, for example, they are produced "by headbangers and roosters", or e.g. treating certain instruments as those that are predestined to perform a soloistic function, while others are the opposite). These perceptions (leading to the construction of conceptual analogues, mapping between domains) are so strong that they are almost unconscious and perceived as "natural", "obvious", and thus they are naturalized cultural categories with accompanying

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[19] For example, reading the famous speech to song illusion discovered by Diana Deutsch in the context of the rules of classical musical counterpoint, which is currently being researched by Robert Gogol. I also have a small part in his research. *Cf.* D. Deutsch, T. Henthorn, R. Lapidis, *Illusory transformation from speech to song,* [in:] *Journal of the Acoustical Society of America*, 2011. Another example may be the Ukrainian experiment on the intersemiotic relations of music and vision in film. *Cf.* T. Lukianova, A. Ilchenko, *Intersemiotic Translation: Meaning-Making in Film and Musical Art*, [in:] *Cognition, Communication, Discourse*, 2019, pp. 78-95.
[20] L. M. Zbikowski, *op. cit.*, p. 76.

possible consequences. The search for moments of attribution of such properties to music occurs very often in the context of the concept of emotions in music[21].

In the field of communities of experience and communication – especially in the context of cross-domain mappings – there are serious inter- and cross-cultural studies, mainly ethnomusicological or cultural studies. "The Kaluli tribe in Papua New Guinea describes the melody in terms of the flow of a waterfall[22]. In Bali and Java, the relation between pitches is defined in terms of size[23], and in the Amazon basin (Suyá tribe) in terms of age."[24], [25] Interestingly, the described lexises, in addition to their static or dynamic spatial reference (location, size), also have a processual reference, as it were, a motor or developmental (age, flow) consequence.

The perceptual-conceptual reflex may be influenced primarily by the language system, which can be clearly seen in the example of the Hopi. Their language forces a paradigm shift in the perception of time and space due to the systemic elimination of verb constructions defining the location of actions on the timeline: the Hopi operate neither in the past nor in the future tenses, but, as Benjamin Whorf writes, the disappearance of the dimension of time shifts the emphasis to the transformations of space, much closer to metaphysics than to Newtonian mechanics. [26] This metaphysics that organizes the Hopi cosmos thus divides everything into objective (revealed) and subjective (revealing)

[21] *Vide:* W. F. Thompson, L. L. Balkwill, *Cross-Cultural Similarities and Differences*, [in:] P. N. Juslin, J. A. Sloboda (eds.), *Series in Affective Science. Handbook of Music and Emotion: Theory, Research, Applications*, Oxford, 2010; M. B. Küssner, *Shape, Drawing, and Gesture: Cross-modal Mappings of Sound and Music*, Londyn, 2014 [not yet published]; P. Kivy, *Brzmienie uczuć*, transl. J. Czarnecki, M. Migut, I. Młoźniak, M. A. Szyszkowska, Warszawa, 2022; M. Susino, E. Schubert, *Musical Emotions in the Absence of Music: a Cross-Cultural Investigation of Emotion Communication in Music by Extra-Musical Cues*, [in:] PLoS ONE, 15(11), 2020; G. A. Bryant, H. C. Barrett, *Vocal Emotion Recognition Across Disparate Cultures*, [in:] *Journal of Cognition and Culture*, no 8, 2008, pp. 135-148; L. B. Meyer, *Emocja i znaczenie w muzyce*, transl. A. Buchner, K. Berger, Kraków, 1976.
[22] The consequences of adopting such a lexis are revealed, for example, in Kaluli's refusal to perceive unison understood in a Western way as satisfactory, because the movement, the fluctuation of the waterfall, as a matrix of sound structures, does not "follow" but meanders, flows, and is multi-layered. The same applies to sound processes (mainly rhythmic and melodic, meter, but also body movement), which are directed "downwards" by Kaluli, similar to a waterfall that cannot "climb" uphill. *Cf.* S. Feld, *Sound and Sentiment, Birds, Weepings, Poetics, and Song in Kaluli Expression,* Durham, Londyn, 2012.
[23] The consequences of adopting such a lexis in gamelan practice are manifested in the division of sounds generated melodic-rhythmically according to their quality: more voluminous sounds, generated from larger instruments, are more serious, produced less frequently and within a narrow range, while "finer" sounds, generated from smaller instruments, are perceived as the "feudal" basis of the sound structure, extracted more intensively and to a much greater extent. Gamelan is therefore a reflection of social hierarchy.
[24] The consequences of adopting such a lexis result from Suyá's perception of music as essentially related to rituals. In their language, the word describing "music" also means "ceremony". Therefore, there are no music related to other areas of community activities, e.g. work, play, courtship, etc. The mentioned rituals are related to the achievement of subsequent stages of age by members of this community. *Cf.* A. Seeger, *Why Suyá Sing: a Musical Anthropology of an Amazonian People*, Urbana, Chicago, 2004.
[25] E. Schreiber, *Muzyka i metafora. Koncepcje kompozytorskie Pierre'a Scheffera, Raymonda Murraya Schafera i Gérarda Griseya*, Warszawa, 2012, pp. 127-128. Also: E. Schreiber, *Muzyka wobec doświadczeń przestrzeni i ruchu*, [in:] *Sztuka i filozofia*, 40, 2021, p. 109. [translation after Schreiber done by myself]
[26] B. L. Whorf, *Model uniwersum Indian*, [in:] G. Godlewski (ed.), *Antropologia słowa – zagadnienia i wybór tekstów*, Warszawa, 2004, p. 436 and n.

universes. In this way, in order to be able to carry out these distinctions linguistically, the Hopi use spatial phrases describing extension, operability, and periodicity (a temporal turn, but limited to a perceptual "now"), and not necessarily their procesual value, which would determine the need for grammatical tenses. That is why, Whorf describes, what in the West " is coming" – in the Hopi "ends here", "begins here".[27]

This is a very special case in which the cultural naturalization of the linguistic description of movement has eliminated its process-temporal value, which is binding to hard, rationally describable reality, in favor of the expressive-internal value, i.e. the metaphysical side of space. Unfortunately, the lack of serious studies available on the aesthetics of music in the Hopi language makes it impossible for me to even outline the assumptions of their description of sound phenomena, but even the above-mentioned basic information allows us to imagine the qualitative aspect of such a discussion, and thus the systemic perception of the movement of sounds.

The examples of non-Western civilisational circles mentioned above reveal that the **search for movement as a source of expression (including human expression) is, at least sometimes, a form of an intuitive pre-cultural reflex (i.e. a perceptual community, not an abstract one). At the same time, the adaptation of movement as an expressive element shows how variously it is subject to the processes of naturalization of cultural phenomena**, especially since these processes take place simultaneously with an interesting spatial or temporal variation as a plane that unifies experience with concepts expressed in language.

However, we must not forget about some obvious **barriers, not so much conceptual as perceptual**. Nicolas Cook notes that non-Western artistic traditions tend to focus on performance and improvisation,[28] while Western ones focus on aesthetics and literature[29]. Thus, for the West, "performativity" is reflexively transparent in relation to the musical work as subordinate to the hierarchy, while for non-Western traditions, "performativity" can sometimes be *a sine qua non*. The author also mentions other perceptual differences: Western culture encultures to the perception of harmony and melody (in this it is obviously

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[27] *Ibid.*, p. 437.

[28] N. Cook, *Analysing Performance and Performing Analysis*, [in:] N. Cook, M. Everist, *Rethinking Music*, Oxford, 1999, p. 244-245, *Cf.* pp. 259-260. *A contrario* – the musical culture of Japan, where music clearly has a fixed, composed structure. *Vide:* 能 *[Nō]*, 歌舞伎 *[Kabuki]*, 文楽 *[Bunraku]*.

[29] According to researchers, this paradigm is currently being transformed due to the transition from a culture based on epistemological transmission (which results in the formation and development of conceptualization) to digital transmission. This transition is already showing symptoms of a revolution comparable to the breakthrough that was the transition from oral-performative to epistemological transmission. A more complete picture of the effects of the transmission medium may emerge in the near future along with the ways of developing, implementing and adapting simulated intelligence in everyday life. *Cf.* H. Lehmann, *Rewolucja cyfrowa w muzyce. Filozofia muzyki*, transl. M. Pasiecznik, Warszawa, 2016.

the leading one, as focused on "abstract" sensitivity), while non-Western culture enculturates to the perception of rhythmics (which is much closer to perceptual sensitivity than abstract sensitivity).[30] Ultimately, in certain cultures, recipients would not necessarily classify such a perceptually complex sound phenomenon as pieces of Ludwig van Beethoven or The Beatles as music, due to the perceptual-conceptual ontological difference in the type, quality and nature of music-producing activities, making it impossible to perceive and name the sound structure generated in this way as music. The same is true of the question of pointing out perceptible sensory and psychic experiences as universal: because of the differences, it can be assumed that the only common experiences for all humanity seem to only be birth and death.

Without conducting comprehensive and detailed transcultural, ethnomusicological, cognitive, psychological, etc. research[31], in principle it is impossible to seriously express any categorical judgments about the "precultural" perceptions of categories within the orbit of interest in this dissertations, such as "movement", "communication", "gesture". Therefore, referring to the categories of embodied cognitions, effective surprises, communities of sensory experiences, etc., I express the hope that they can be an element of a unifying platform, accessible to every human being sensually. If this is not the case, I must be content to limit the scope of my hypotheses to the Western civilisation and those who are encultured to receive works within its artistic tradition.

What is certain, however – as Alexander Truslit confirmed in his Gestalt experiment and Albert Stanley Bregman in his proposal for an auditory scene – is that **there is a cognitive perceptual community that allows the audience to determine the similarity or compability of the reception of an acoustic phenomenon**[32]**. However, it is prerequisite for this to be a competence or cultural agreement.**

In this regard, the Western connection between physical movement and the movement of sounds cannot be understood without two exceptional traditions – Platonic and Aristotelian – which marked the axis of dispute of many aesthetic categories, especially the presence of emotions in music, the problem of education and the function of music in the postulated society, but also indirectly revealed the fact that already in the 5th century before the birth of Christ, the naturalization of the category of movement of sounds as a cultural category was a process accomplished and consolidated.

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[30] N. Cook, *op. cit.*, pp. 259-260.
[31] So institutional, expensive, scheduled for many years, perhaps decades, and therefore beyond my possibilities.
[32] *Cf.* A. S. Bregman, *Auditory Scene Analysis. The Perceptual Organization of Sound*, Cambridge, 1994.

1.2. Two culturally naturalized paradigms of perceiving the movement of sounds: externality (Platonic) and interiority (Aristotelian)

The traditional, albeit simplified, division into **external (externalized) movement in Plato's and Aristotle's internal (internalized) movement, [33] which governs everything in music**, is made clear by reading their canonical texts on music (education, emotions, the nature of scales, etc.) and writings from various fields of their spiritual heirs, especially Augustine of Hippo (in his texts on time) and Thomas Aquinas (in his *Summa Theologiae* concerning future, post-mortem ways of cognition and the degree of their dependence on time and space). Krzysztof Guczalski's lectures on the idea of emotions in music are also made clear of this division. It is difficult to answer the question whether Plato and Aristotle were the first to formulate this view, or whether they themselves are part of a broader tradition (e.g. borrowed by Pythagoras in India or adopted from Damon of Athens[34]). Their views seem to be so fixed and crystallized that they (especially Aristotle) mention them almost on the margins of other considerations, as if they were referring to something already obvious, well known to the recipient of their works, which allows us to assume that we are not talking here about a novelty, but an inscription and creative development of already existing trends in perceiving music. Of course, one can also consider as equally probable the scenario in which the works of both philosophers concerning their conception of music existed, but have been lost.

Plato's conception of music as movement focuses on the concept of mimetic, movement directed outward: the movement of tones is to resemble, imitate both through structures, but also through the choice of *mode,* voice modulation, gestures of a brave man, and introduce a certain form of desired mood, atmosphere (the author mentions tearfulness, which should be avoided, and sublimity, which he promotes). This is therefore a special feature of this understanding: being on the one hand a dynamic image, but expressed through its resemblance to movement[35]. The ancients would probably have described this resemblance as ***σημεῖα [sēmeia]* (signs** that today should be understood as products

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[33] This division has had various forms in the history of music - including the dispute between supporters of absolute and program music in the second half of the 19th century. There were also periods that synthesized both proposals in their aesthetic approach, in which one could not be separated from the other. In this sense, the medium (as a whole, the vehicle for expressing a musical work) and the concept (the message, the idea that the composer wants to convey), described by Harry Lehmann in his *Digital Revolution*, are inextricably linked to each other until the sense of expressing the concept in work, aesthetic experience and through a medium, e.g. in the conceptual work of John Cage. *Cf.* H. Lehmann, *Rewolucja cyfrowa w muzyce…, op. cit.*, p. 134 and next. Page numbers in this item always refer to its electronic edition in e-book form.

[34] R. Kasperowicz, *Od Arystotelesa do Adorna w poszukiwaniu teorii ekspresji muzycznej*, [in:] *Ethos: kwartalnik Instytutu Jana Pawła II KUL*, annual 19, no 1/2 (73/74), 2006, p. 163.

[35] Platon, *Państwo*, transl. W. Witwicki, Kęty, 2003, p. 95, side no 398.

constituted by convention).[36] This issue would later be taken up by Augustine of Hippo and his successors, who thought of music as the the science of mensurating well (or – as in Polish – "art of good modulation", *ars bene modulandi*).[37] It should be noted, however, that Augustine understands this modulation in a much narrower sense, focusing in his argument not on the nature of this movement, but on the ways in which it is shaped.

The strange similarity of the movement of sounds to the movement of the body, as well as their influence on the minds and bodies of the audience, is understood as a magical influence, and manifested all the more strongly because Plato proposes a number of kalokagathatical fortifications and regulations resulting from his beliefs, both in the technical aspect of music creation (the choice of scales, instruments) and in the social aspect (the establishment of a kind of "police", music censorship, whose task is to ensure an appropriate level of "ethical" content in the musical work).

Aristotle presents an opposite understanding of music as movement. He argues that music reflects ethical states (emotions, virtues) through a natural resemblance, indicating **ὁμοίωσῐς [omoíōsis] (likenesses of ethical characters).**[38] Music is therefore similar to emotions, it causes movements of the soul, through which it restores its harmony and natural state[39]. The influence of music on the listener takes place in the technical sphere, *ἦθος [êthos]*.

This kind of evoking of moods is even emphasized by Aristotle's division of songs into genres according to the direction of their influence (ethical, practical, enthusiastic) and the encouragement to adapt technical and compositional means to the intended directions of influence (choice of instruments, scales). The cognition of the invisible movements of the soul, the experience of them (preferably in the form of the experience of *κάθαρσις [catharsis]* and the accompanying purification, relief and delight), and finally the performance action is a a movement of the soul with the right measure and rhythm, which is why Aristotle recommends the creation of music not for its own sake, but oriented towards the listener. The last one is not so much to flatter tastes (although the pleasure of music is an important and clearly articulated value for Aristotle), but to "examine" the listener, to check how to evoke his inner movement of the soul through the movement of sounds. For this reason, mimeticism in Aristotle's conception of sound movement is quite subtle, not to say limited: it

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[36] R. Kasperowicz, *op. cit.*, p. 166.
[37] It can be also translated as „art. of good shaping". Augustyn z Hippony, *Św. Augustyna traktat „O muzyce"*, transl. L. Witkowski, Lublin, 1999, p. 87 [I, 2, PL, XXXII].
[38] K. Moraczewski, *Sztuka muzyczna jako dziedzina kultury. Próba analizy kulturowego funkcjonowania zachodnioeuropejskiej muzyki artystycznej,* Wydawnictwo Naukowe UAM, Poznań, 2012, p. 131.
[39] Arystoteles, *Polityka*, transl. L. Piotrowicz, [in:] Arystoteles, *Dzieła wszystkie*, vol. VI, Warszawa, 2003, p. 221 and next, side no 1340b.

refers primarily to all internal movements, without at the same time rejecting the possibility of evoking the feeling, that is, identifying with it by the recipient. Aristotle's ideas have had and continue to do so, and traces of them can be found in the conception of the spheres of Boethius of Dacia or another of his mental disciples, Thomas Aquinas[40].

1.3. Strategies for interpreting the Movement of Sounds as Cultural Categories

1.3.1. Semiotic and acoustic concepts on the example of Johann Gottfried Herder's thought

According to Ewa Schreiber, comparing music to the human experience of movement is a successful conceptual metaphor read at the intersection of perception, the tradition of thought (philosophy, aesthetics), the concept of μί̄μησις [mī́mēsis], cognitive science, the problem of language and many others[41]. This metaphor is so universal that, along with the notion of space, it has become one of the basic paradigms of thinking about music. Schreiber concludes (following Scruton) that due to the experience of double intentionality, essentially everything that humanity can say about music – including its technical, purely musical parameters – is dressed up in the conceptual grid proper to these two paradigms[42].

The notion of the descriptive dependencies of acoustic categories expressed in language on thought and, more broadly, on cognitive experience, is in line with the considerations of Johann Gottfried von Herder, the Enlightenment continuator of the tradition of Jean-Jacques Russeau, as well as the founder of the Romantic reflection on meaning and language, which, after all, had a direct impact on Goethe and Schopenhauer, to whom Hanslick also referred. At the heart of Herder's thought, for which he would later be called the "philosopher of humanity", is the search for pure humanity in its most basic dimension, i.e., in the basic psychophysical functions of man[43].

1.3.1.1. The concept of the relation between linguistic (and non-linguistic) structures and thought in the theory of language, mind and interpretation

For Herder, the double intentionality of description is expressed both in the manifestation of the belief in the superiority of free speech in relation to writing as such,

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[40] A. Andrzejuk, *Swoistość sfery afektywnej w ujęciu Tomasza z Akwinu*, [in:] *Rocznik tomistyczny*, vol. 1, 2012, p. 123 and next.
[41] E. Schreiber, *Muzyka i metafora…, op. cit.*
[42] *Ibid.*, p. 105.
[43] E. Cassirer, *Esej o człowieku. Wprowadzenie do filozofii ludzkiej kultury*, transl. A. Staniewska, Warszawa, 1977, p. 104.

which is bound by a grammatical and lexical "straitjacket",[44] and in the forcefully posing of the problem of the dependence of thought on its expression in language. **At the same time, the philosopher emphasizes that any type of thinking that separates thought from will and affect is wrong.** It should be added that for Herder, music is the pinnacle of human expressive abilities[45]. What is more, for him it is a form of free expression of the spirit, a reflection of genius (which Hanslick would later describe as reflecting the movement of the spirit, and Schopenhauer as a movement of the will), and at the same time an expression through *a quasi*-language. Therefore, his **linguistic-cognitive concepts (thought, language, translation) are applied according to his aesthetic concepts.** Objective meaning, determined by language, must necessarily also take into account its opposite—the free, expressive "surplus" (the capture of sensory impressions, the changeability of context)—which, according to Herder, is lacking in the conventionalized written word. This kind of freedom frees us from the aforementioned "straitjacket".

With the rejection of apriorism, the systematizing approach limited to the bare minimum, and narrow expressionism, Herder avoids the claim that thought expressed by a non-linguistic structure (e.g., a sculptural or musical structure) must be a derivative of linguistic expression. He illustrates this by putting in the **theory of language an equivalence between thinking and language, meaning and the structure of words**, which he expands on in his aesthetic concept, claiming that **non-linguistic art is also dependent on thought in the sense that it not only expresses thoughts, but also assumes them in the perception of the recipient**[46].

The dependence of thinking on the existence of language and the existence of linguistically describable phenomena, the delineation of patterns (clichés) and automation is conceptually related to perceptual and affective experiences, **since impressions are the source and basis of all concepts, both empirical and non-empirical (although metaphorically developed from empirical).** David Hume's famous assumption that "mankind are so much the same, in all times"[47] is brought to an end by Herder pointing out that experience transcends concepts, beliefs, values, historical periods, and cultures if the

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[44] M. Froster, [entry:] *Johann Gottfierd von Herder*, branch no 7 *Aesthetics*, [in:] E. N. Zalta (ed.), *The Stanford Encyclopedia…, op. cit.* [source:] https://plato.stanford.edu/entries/herder/ [accesed: 01.05.2023] Nb. Herder's philosophy regarding specific areas of his interests (thought, translation, music) is scattered in various texts from different periods of his work, and some threads necessarily have to be reconstructed (as Moraczewski does), so they require particularly careful critical reading. Due to the lack of both Polish- and English-language syntheses, exceptionally in this chapter I use as the main source of knowledge about his philosophy an extensive entry from the *Stanford Encyclopedia of Philosophy and Philosophers*, as well as the dissertation of Emily Dolan and the article by Krzysztof Moraczewski.
[45] M. Froster, *op. cit.,* branch no 4 *Philosophy of Language, Interpretation and Translation.*
[46] *Ibid.*
[47] D. Hume, *An Inquiry Concerning Human Understanding*, P. Millican (ed.), Oxford, 1955, p. 60.

process of translation (as a special kind of interpretation) is properly carried out. This should be done without regard to any own beliefs, thoughts, or even one's own understanding, but in such a way as to (1) precisely establish the linguistic rules determining the proper meaning (including through in-depth knowledge of the author of the original work, his works, culture, etc.) and (2) relying on the sensual reproduction of one's own impressions (perceptual and affective) to obtain the source immediacy of the message (including understanding and reproducing the feelings of the source author).

Herder's hermeneutic and translation process is, on the one hand, objective (an objective interpretation of the source objectivity, "interpretation is like rather than unlike natural science"),[48] and on the other hand, at a deep level, it takes into account the necessity of "divination" (the subjective interpretation of the source subjectivity, i.e., radical mental difference). Herder recognizes that it is impossible to achieve absolute semantic fidelity (absolute concordance), but rather it is a matter of accommodation, a kind of "looseness", "freedom", making a careful "parallel" aimed at semantic accuracy. For Herder, translation is not only a reconstruction of the meaning or a grasp of the conceptual and musical form of a literary text, but also requires a kind of re-creation of forms in a new language, following the path set by the source author.

When it comes to music, Herder's burden of reflection is contrasted with the distinction of systematics from which he avoided. On the contrary, it is based on a premonition about **the communal nature of perception, which is actually shaped by language, meaning, and perhaps also by culture.** When it comes to Herder's approach to the movement of sounds as a hermeneutic category, two areas of his research should be mentioned:

(1) The concept of song not only as a synthesis of the text and musical sounds, but originally as a unified gesture, not divided by the traditional division into poetic music (conveying ideas) and instrumental music (not transmitting them);[49]

(2) Reflections on the nature of musical sensations in themselves in the psychoacoustic aspect (resonance and tone) as synthetic sensations.

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[48] M. Froster, *op. cit.*

[49] *Musica antica*, *musica moderna*; *prima prattica*, *seconda prattica*; absolute music, program music - based on a discourse on the scope of emancipation of sound constructions spread between the communicability of ideas (as Moraczewski notes, essence) and sensual experience (pure hedonism), as well as on the separation of shaping orders (purely musical and poetic).

1.3.1.2. Song as a unified gesture

While the structure of thought is the same structure as language, this logical inference does not apply to the non-linguistic arts, which have their own logics and means of expression. This parallel is therefore limited to the aspect of comprehensibility and meaning. This is due to the use of conventional formal strategies and the fact that meaning has been shaped on linguistic grounds (both as a reflective representation and as a perceptual reception and description).

Of the song, Herder says that it is **the source of all language (and consequently all thought)**. It is direct in the scope of the word and direct in the field of the senses. Therefore, the song appears as a primordial semantic gesture, resembling a unified speech act. In the conjunction of speech and sound, which distinguishes him from, for example, Russeau, Herder is looking for an expressive, reflective and figurative value[50]. In this sense, Herder adheres to the Greek ideal of the triune *χορεία [choreía]*.

An example of the fundamentally understandable expressive value present in music itself, which does not necessarily cooperate with poetics, is the case of speech "man already as an animal", when he expresses all his psychophysical reactions, especially the violent, passionate and painful ones, with a wild, inarticulate cry and a *casus* a struck string that resonates and calls for an echo even if no other string matches it. This primordial expressiveness of sounds belongs to the category of sound analogies to the sonic, sensory, somatic and kinetic (sensual) experiences of man[51].

Moraczewski also notices in Herder, although he does not call it so, the value of Peirce's infinite semiosis: since music has a figurative character (which results from the consequences of its dependence on language, and thus thought) and constitutes a form of metaphor, it can be inscribed "(...) **into a series of conventionalized but developing, perfecting and increasingly complex metaphors, whose figurativeness has blurred over the course of long-term use.**"[52] It is also a reference to the value of naturalization of cultural categories. In this sense, the emancipated purely sonic metaphor "illuminates" (reconstructs) fragments of the original meaning of metaphor while it was still in primary unity

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[50] K. Moraczewski, *Muzyka instrumentalna i język. Stanowisko Herdera w osiemnastowiecznej debacie muzyczno-estetycznej*, [in:] *Prace Kulturoznawcze*, vol. 25, no 1, Wrocław, 2021, pp. 42 and next. Nb. this distinction itself is remarkably similar to the gestural triads discussed later.

[51] *Cf.* Anaphones. P. Tagg, *Music's Meanings: a Modern Musicology for Non Musos*, Nowy Jork, Huddersfield, 2013, p. 485.

[52] K. Moraczewski, *Muzyka instrumentalna…, op. cit.*, p. 43. Nb. Among other things, it is from this observation by Moraczewski commenting on Herder that I will seek the basis for the hypothesis that musical gestures (as "fragments of the original meaning of metaphor, when it was still one with poetics") are subject to Peirce's semiosis and are always at least the first such semiosis following the primary action of marking an object (experience). This observation is the basis for the reductive and hierarchical hypotheses.

with poetics (and poetics itself was even more primal, more sensual than intellectual). What is more, metaphor can also illuminate those moments in which their linguistic expression entails serious deficiencies. As Moraczewski points out, this is especially the case when describing extremely individual, unique phenomena, but also those that are very general, absolute.

This leads to the conclusion, which Herder seems to confirm, that both linguistic and non-linguistic thoughts need their own hermeneutics, though not their systematics. Even within the framework of non-linguistic fields of art, which cannot be mutually reducible to each other, hermeneutics allows us to avoid inaccurate or unexplanatory metaphors, especially since sensory intercourse causes the individualization of sound experience and its reception, which will be discussed in the next section. "The composer does not arrange linguistic generalities, but is something like a director of idiosyncratic experiences."[53] Moraczewski, reconstructing Herder's position, adds: **"We need one hermeneutic with common principles, and this hermeneutics covers the entire field of art. There are no artistic expressions (stetements) that would not be subject to it."**[54]

1.3.1.3. The concept of synthetic (monadic) properties of acoustic categories

Herder's study of the nature of these idiosyncratic musical experiences is founded on the 18th-century but also earlier, expressed for example in the work of Athanasius Kircher, search for a framework for reducing music to a single overarching principle encompassing not only the study of music, but also the practice of composition. Kircher organizes his reflections on music by writing about the phenomenon of magnetism, while Jean-Philippe Rameau writes about the concept of *corps sonore*, the resonating body in which all the harmony derived from overtones is enclosed[55]. In contrast to Rameau's constructivist, structuralist thought, Herder, reading the same Leibnizian category of monads, is rather looking for a concept focused on sensory stimuli of a synthetic nature. They explain the effect of music on the listener[56].

For Herder, aesthetics is therefore the science of human perception, understood on the one hand as a reflexive act, an act of the understanding **(understanding the process of distinguishing of things)**, [57]and thus mental and, consequently, ultimately linguistic,

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[53] *Ibid.*, pp. 48-49.
[54] *Ibid.*, p. 54. I see a chance for such a hermeneutics in the construction of a generative grammar based on gestures.
[55] E. I. Dolan, *The Idea of Timbre in the Age of Haydn*, Ithaca, 2006 [non published], p. 147.
[56] *Ibid.* p. 149.
[57] J. G. Herder, *Werke*, W. Pross (ed.), vol.. 2: *Herder und die Anthropologie der Aufklärung,* Munich, 1987, p. 142 [after:] E. I. Dolan, *op. cit.*, p. 151.

subjective-objective. However, Herder also expresses another intuition, namely that of the central role of experience, a purely subjective element. A speculative, constructivist aesthetic (as is the case with harmony in Rameau's work) cannot in the slightest degree explain its influence on the soul, and therefore the one existing in the philosopher's time cannot be considered true in his view, **capable of being the beginning of the science of music**. Herder explains this with the notions of resonance and tone, in which resonance is supposed to be an acoustic (natural) phenomenon, objectively measurable, while tone actually belongs to the domain of aesthetics oriented towards the study of subjective perception. The criticism of Rameau's conception, in which chords as natural are supposed to result through overtones from the resonance of the strings, stems from the fact that this category belongs to the natural sciences, ignoring the sphere of perception[58]. Herder firmly believes that the basis of all music is Leibniz's first moment of experience, "(...) where no parts, neither extension, nor figure, nor divisibility is possible."[59]

Therefore, for Herder, as Dolan quotes, the *ars combinatorica* of tones is not only a contrapuntal constitution of the melody, but also a pitched "accent of passion". All the succession of sounds, their sequences and successions are oriented towards the result, which should be the hedonistic pleasure of the ear, and through their effect on the soul they can become a "melody" that is much more than just the resultant of a graph of intensity (dynamics), pitch and time[60].

Herder notes that **naming the perceptual impact of sounds goes beyond the technical language of music, using the conceptual, empirical, and sensory grid of language**. To this end, he juxtaposes the antitheses of roughness and smoothness, strength and weakness, gloominess and brightness, awakening and putting to sleep. However, by refining his theory of the figurative nature of music, he points out that sounds cannot illustrate things, because each person reacts differently to a given tone (subjectively). However, he excludes one situation from this statement, namely that there are certain communities of phenomena that affect listeners in the same way (objectively, e.g. by making everyone sad).[61] According to Herder, as Dolan notes, tones "tune" the soul and mind, "playing" through external forces and "tuning" the strings of thought through specific affects, as well as participation in what surrounds the listener[62]. Assuming the individuality of the reception of music, Herder argues that no instrument is analogous to the instrument of the human mind,

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[58] *Ibid.*, p. 155.
[59] G. W. von Leibnitz, *Monadology and Other Philosophical Essays*, transl. P. Schrecker, A. M. Schrecker, Nowy Jork, 1965 [after:] E. I. Dolan, *op. cit.*, p. 157.
[60] E. I. Dolan, *op. cit.*, pp. 156 and next.
[61] *Ibid.*, pp. 160-166.
[62] *Ibid.*, p. 162. Nb. Similar reflection expresses Rameau, *Cf. Ibid.*, p. 147.

to human inner nature, as well as to reactions to emotional vibrations and passions. That is why Herder rejects the idea of an ocular harpsichord[63]. On this basis, I think that he would also reject Olivier Messiaen's stained-glass synesthesia or Alexander Scriabin's light piano, placing himself more in the circle of Schönberg's *Klangfarbenmelodie*, where he would appreciate the plastic aesthetic value of the timbre of the tone as its "soul".

Based on Herder's earlier reflections on the relation between language, thought and music, it is not difficult to guess that he is referring to the figurative metaphors of sound, which (as happens in semiosis) form themselves into sequences, thus moving away from their original linguistic and sound meaning. When a metaphor within a sequence "approaches" the originally designated object, then it seems that, according to Herder, it is then able to affect a wider group of listeners, who may differ in concepts, beliefs, values resulting from their location in different historical periods, their cultural background, and even their own individual characteristics. The differentiating (subjectivizing) factor may be, for example, a style or a genre (as a conventional set of rules and principles of form), while the connecting (objectifying) will be the fact of being human, i.e. the genre-imprinted linguistic determinism of thought and access to certain original own expressive forms, including some figurative ones. It should be added that Herder's views, quoted by Froster, Moraczewski and Dolan, clearly show not only a synthetic, monadic sensitivity. Herder also marks a certain hierarchy among the already discussed accents of passion – both a single note, a whole melody, a chain of accents of passion, but also a song as a work and as a genre can have this synthetic character, constituting a "melody" of an increasingly higher order influencing the recipient's experience.

1.3.2. Semiotic concepts

1.3.2.1. Intersemiotic translation

The theory of translation and transcription has a very rich methodological background, especially in the field of language sciences, although some fields, such as music, are very reluctant to succumb to the necessity of knowing and skilfully applying these practices. The problem here is not only of a nomenclatural nature, but also of a self-aware, or even legal, nature of artists performing creative activities such as elaboration, adaptation, arrangement, rearrangement, transcription or harmonization of existing works. In recent years, the study of intersemiotic translation, i.e. Roman Jakobson's proposal, enriched with separately distinguished intralingual and interlingual translation, has become an important

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[63] *Cf. Ibid.*, pp. 160-166.

issue in the field of language and culture studies[64]. Intersemiotism is not limited only to the interpretation of linguistic signs by means of other linguistic signs, but also linguistic signs by means of signs of non-linguistic semiotic systems, which would not be a simple complementarity. Such an approach opens up the possibility of applying the concept to a wide range of areas of culture, from literature (poetry, drama and prose), but also comics, film and TV series, recordings and video games, dance, performance, theatre, sculpture, graphics, painting, installation, textiles, clothes and styling, and finally Morse code and music. As we know, each of these areas has developed its own "poetics", or more precisely, a system of guiding organizational principles, both formal and, for example, dramaturgical, technological, etc.

From Herder's views quoted above, it is clear that translation does not consist only in the reconstruction of a referential message in a new language (in this case, a system of signs), but in the creation of new relations generated by another language with its own "poetics". This process takes place in a creative way, essentially establishing a new work of art, albeit dependent on the original source, which can broaden or improve (or quite the opposite) the understanding of the source text. Hence, Herder draws attention to the necessity for the translator to possess high competence, or even "genius", in order to carry out such an action correctly not only on the level of re-creating the semantic and linguistic rules of the source text, but also on the level of reconstructing its impressional properties. Referring to Herder, Haroldo de Campos (as quoted by Queiroz and Aguiar) writes that **not only what is signified, but also the sign itself (the tangible sign of the sign itself, with all its morphological materiality – visuality, sound) is subject to translation**[65].

For this very reason, translation is not equivalent to the source text, but on the contrary: it transcreates a multi-level system of relations within the processes belonging to the different, multi-level and mutually limiting semiotic systems that occur in this work[66]. It does all this through interpretation, reconciling what should be sacrificed with what should be preserved in the profit-and-loss ratio in order to be able to make an effective reproduction of the original message in accordance with the translator's assumptions[67]. Hence, in the Polish language, a distinction is made between "tłumaczenie" (translation as high fidelity transfer) and "przekład" (translation as interpretation): the first one

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[64] R. Jakobson, *On Linguistic Aspect of Translation*, [in:] *On Translation*, 1958.
[65] J. Queiroz, D. Aguiar, *C. S. Peirce and Intersemiotic Translation*, [in:] P. Trifonas (ed.), *International Handbook of Semiotics*, Dordrecht, 2015, pp. 202-203.
[66] *Ibid.*, p. 213.
[67] *Ibid.*, p. 204; *Cf.* A, Gawarecka (ed.), *Intersemiotyczność*, [in:] Poznańskie Studia Slawistyczne, no 2, 2012; M. Kaźmierczak, *Od przekładu intersemiotycznego do intersemiotycznych aspektów tłumaczenia*, [in:] *Przekładaniec*, no 34/2017, pp. 7-35.

takes into account a wide range of relations, forcing the translator to have a higher level of discipline, while the other one gives the translator much more freedom, allowing him to narrow down the layers of relations being translated.

One of the methods of explaining the phenomenon of intersemiotic translation is **Charles Sanders Peirce**'s theory of sign[68]. He distinguishes *common sense* (even though it is extremely subjective, relative, and individualized in inferring phenomena not only about other people, but even about oneself), opposing it to everything that is speculative (metaphysical). Everyone perceives phenomena subjectively, which blurs the distinction between fiction (an object with characteristics dependent on judgments) and reality (an object with characteristics independent of judgments, founded on the notion of community and external to the mind), so it can be said that people live in different worlds, or at least spaces (dimentions)[69].

> "(...) Sensory phenomena are only signs of reality. It is not, however, a reality which is an unknown cause of eye-data, but a *noumenon*[70] or concept which is the ultimate result of the mental activities set in motion by the visual data."[71]

For this reason, Peirce**'s idealistic metaphysical theory** states that **substance is the sum of its properties (manifestations).** Their existence means that it is possible to know a given substance. From the point of view of methodology, the idealistic metaphysical theory is identical with Peirce's **pragmatic maxim** that **the notion of an object (both objective by definition[72] and subjective in terms of recognition[73]) is identical with the concept of the effects it produces (i.e. a hypothetical judgment, a prediction[74]).[75]** For this reason, the manifestation of the object (the sign) can be identified with the object itself[76].

Peirce distinguishes between types of signs because of their morphological differences and the way in which they transmit to the interpreter an embodied habit

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[68] Despite the common criticism of the too empirical approach of neopositivism, which includes the theory of meaning, as it may lead to undermining the meaning of philosophy and some scientific theories as a whole, Peirce's pragmatic maxim should not be associated with it. It is basically an extreme form of idealism, leading to the blurring of the line between fiction and reality. *Cf.* S. Tokariew, *Charles Sanders Peirce. Między logiką a metafizyką*, Kraków, 2017, p. 107. The page numbers in this item always refer to its electronic edition in e-book form.

[69] *Ibid.*, p. 62.

[70] νοούμενον *[nooúmenon]* – Kant's "Thing-in-itself".

[71] C. S. Peirce, [in:] *2:470*, 1871, [in:] S. Tokariew, *op. cit.*, p. 81. [translation after Tokariew done by myself].

[72] I.e. the value of clearness according to Peirce's pragmatic maxim.

[73] I.e. the value of clarity according to Peirce's pragmatic maxim.

[74] I.e. the value of effects according to Peirce's pragmatic maxim.

[75] S. Tokariew, *op. cit.*, p. 81.

[76] *Ibid.*, pp. 83 and next.

(experience, cognition) in an object. Therefore, the possible behavior of the interpreter (i.e., interpretation) is limited. Peirce's proposed types of signs are[77]:

(1) **Icon**: there is a feature (similarity) common to the sign and the object;

(2) **Index**: the sign and the object interact directly, physically in a cause-and-effect way (interdependence, "contiguity");

(3) **Symbol**: there is a regularity in the relation between a sign and an object, a law or a rule.

The aesthetic sign, as Queiroz and Aguiar emphasize, as the basis of semiosis and subject to intersemiotic translation, is above all **iconic. It is inextricably linked to the object, it is a reflection of its structure and understanding. It makes it possible to make new discoveries about the object, in accordance with the metaphysical theory and the pragmatic maxim**.

1.3.2.2. Infinite semiosis

Peirce's classic semiosis (sign action) is presented as a model of relations in a triad:

object (O) – sign (representative, S) – interpreter (interpretant, I)[78].

This triad is an irreducible to a simpler relation process of interpretation. It can be read, the authors point out, as a medium of communicating to the interpreter the form (i.e. regularity of disposition) contained in the object (from the object through the sign) and causing a limited set of effects in the interpreter. The transfer of knowledge thus takes place through signs. The interpreter is sometimes referred to as *a quasi-mind*, but it does not have to be related to the human mind, but rather corresponds to the interpretive context in which semiosis occurs[79]. That is why an interpreter is sometimes defined as a sign of a secondary nature, produced by the recipient as a result of the perceptual experience of the material carrier of the sign and being a reflection of the way it is understood[80]. It would be, therefore, I think, a form of conceptual and sensual representation at the same time.

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[77] At the same time, according to some researchers, they are separate types of intersemiotic translation. Queiroz and Aguiar, on the other hand, focus only on the iconic feature. *Cf.* J. Queiroz, D. Aguiar, *op. cit.*; K. Guczalski, *Znaczenie muzyki, znaczenia w muzyce. Próba ogólnej teorii na tle estetyki Susanne Langer*, Kraków, 2002, p. 50 and next.

[78] J. Queiroz, D. Aguiar, *op. cit.*, pp. 206 and next; Tokarev translates this structure as an "object-sign-subject". *Cf.* S. Tokariew, *op. cit.*, p. 69 and next.

[79] J. S. Arias-Valero, E. Lluis-Puebla, *A Conceptual Note on Gesture Theory*, [in:] *Journal MusMat*, vol. 5, no 1, 2021, pp. 91-92.

[80] Guczalski also proposes an extension of Peirce's triad to include the (so far default) recipient, e.g. in the approach derived from Susanne Langer's aesthetics and theory of meaning (Peirce's interpretant is consistent with Langer's concept). *Vide:* K. Guczalski, *Znaczenie w muzyce…*, *op. cit.*, p. 50 and next.

A piece of music can be symbolically represented as: **O:** sounds – **S:** score (or any other carrier of the musical work) – **I:** conceptual and sensory representation along with the recipient's psychophysical reaction to it[81].

As Queiroz and Aguiar point out, since the use of intersemiotic translation corresponds in practice to the context of Peirce's semiosis, the translation process itself can be schematically presented as follows.

The object of the sign is the source. The translated object reveals new information about the source filtered by the sensitivity of the interpreter, who is the target (perceptor) of the semiotic process (let's call it that way – 1st **intersemiotic interpretation of semiosis**, as described by Queiroz and Aguiar)[82]: **O:** the primary manifestation of the translated sign – **S:** the structure of the translation (into the proper code of the work) – **I:** the goal of semiosis.

As part of my work *visibilium et invisibilium,* I used, for example, the following semiosis:

O:	S:	I:
The physical act of a match friction revealed in streak imaging[83]	Sound Structure	The composer's conceptual and sensory image

The translation of the material output object – in this case, the physical act of striking light from a matchstick, taking place in specific dimensions of physical space, with a specific duration and clearly defined phases, also having sensory values (kinetic, somatic, teleological and audial) – into a sign operating with musical pitch-time dimensions, timbre, intensity and teleogical vector, was made by the interpreter (by myself, present by default in this scheme) in accordance with the interpreter, i.e. my perceptual image of this continuous, leading to a

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[81] It should be noted that Roman Ingarden, I think, would argue with such a statement, but I leave it here. *Cf.* R. Ingarden, *Utwór muzyczny i sprawa jego tożsamości*, Kraków, 1973.

[82] J. Queiroz, D. Aguiar, *op. cit.*, p. 207 and next.

[83] „Schlieren photography [streak imagining] is an optical technology that [1] can photograph [video] the flow of fluids of varying densities, [2] which is used to record regions of different refractive index in a fluid, and is especially used to visualize the flow of air around objects. Schlieren flow visualization is based on the deflection of light by the flow density gradient, so gases in the workplace with different densities or temperatures can be observed. The classical optical system consists of a parabolic or spherical mirror, a light source [usually the laser], a knife edge placed at the focal point, and a camera [this knife is usually a razor blade]. These simple optical elements can generate instantaneous density profiles with images. (…) The light moves onto or off the knife edge, resulting in a darker or lighter region in the image, respectively. The deflected light is compared to undeflected light at a viewing screen. The light that is deflected toward or away from the knife edge produces a shadow pattern depending upon whether it was previously blocked or unblocked. This shadow pattern is a light-intensity representation of low-density regions and high-density regions which characterize the flow.. (…) Schlieren photography can be used to visualize the movement of gases released from an industrial process with different densities to the ambient air, but only when the gases themselves are transparent. Refractive index gradients can be caused either by changes to temperature or pressure of the same fluid material or by variations in the concentration of components in mixtures and solutions." [additions in brackets my own]. Z. Cao, Y. Huang (et al.), *Experimental Techniques* [in:] H. D. Goodellow, Y. Wang (eds.), *Industrial Ventilation Design Guidebook*, vol. 2, 2021.

change in the state of the activity. In this sense, the interpreter is the goal of semiosis – it organizes its stages, gives it direction, is the "key", the choice of the path and *tertium comparationis* in the process of translation between different semiotic systems.

Infinite **semiosis consists in successive transformations of a sign (S) into an object (O),** therefore the elements of the triad within the iteration of the semiosis spiral, as mutual transmutations, can appear both as things, concepts or signs. With this operation, it is possible to reduce triads to a lower-order relation, up to the determination of the source, irreducible triad of semiosis, in which the actually existing object was first signified and read by the interpreter.

Due to the use of intersemiotic translation in the context of Peirce's semiosis, the process of translation can be described as a "higher"-staged, coupled form of interpretation in relation to the schematic representation presented on the previous page (2nd **intersemiotic interpretation of semiosis**)[84]: **O:** structure of the translation –**S:** the goal of semiosis – **I:** specific effect on the recipient. **The sign is the source here as a new object**, its purpose is to convey possible new information and to influence the interpreter.

An example would be (in relation to the previous scheme):		
O:	**S:**	**I:**
A sound structure composed on the basis of physical object	The composer's conceptual and sensory image	Recipient – evoked psychophysical reaction

The originally isolated sign, which is the structure of translation between semiotic systems, and which now becomes a new object of semiosis, together with "key" of its achievement, i.e. the interpreter, which is a new sign, is subjected to the perceptual judgment of the recipient through the context of what effect, mental image, or psychophysical reaction has been exerted on it. In this sense, the new interpreter is the new goal of the new semiosis and thus a definite reaction is evoked in principle.

It seems, therefore, that the process of translation carried out in such a way as to correlate creative and receptive grammars is always at least two-stage (it consists of the two semioses described in interpretations 1st and 2nd), or, in other words, consists of two processes coupled with each other. Successive versions of the same source object can be generated simultaneously (at the same hierarchical level).

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[84] J. Queiroz, D. Aguiar, *op. cit.*, pp. 207 and next. Nb. I express this intuition differently from the authors, because they rather perceive these interpretations separately, as their alternatives.

It is only by using the pragmatic maxim, i.e. by transforming the reaction of the recipient (the interpelant of a lower-order semiosis) into a sign of a higher-order semiosis (e.g. by juxtaposing the variants of semioses at the same hierarchical level as the sum of variants), that a new interpreter is obtained (a sense of the development of a new value, a new quality). It is for this reason that I believe that the process of infinite semiosis takes place on two planes: horizontal and vertical. The ability to persuade the recipient to notice the affinities between successive steps, i.e. to evoke a psychophysical reaction in him, will guarantee the actual transformation of the theoretical possibility of infinite semiosis into a practical result.

One more remark is necessary here, namely, that both the phenomena of embodied cognition and the naturalization of cultural categories mean that semiosis is not necessarily a conscious action. The source object may be hidden from the translator due to the automation of certain reflexes, schemes, perceptual scripts, reacting to the effect of the action in the same way as one reacts to the action itself.

Taking into account the two intersemiotic interpretations of semiosis proposed above (and their practical illustration), Queiroz and Aguirar quote the position of Victoria Welby, who notes that the processes of semiosis are actually a form of *Inter-translation* , reflecting the process of interpretation and understanding of phenomena. The processes of semiosis are thus triadic, iconic, because they manipulate the physicality of the sign, interpretive, because they transcreate the properties of the source, and context-dependent[85]. As Campos points out, the most careful reading of signs occurs in the process of translation, which, according to the authors, leads to the "liberation" of the phenomenon by means of translation (even to very distant systems of signs) from the original semantic dimension, forcing the source of the sign through the formation of habits, manipulations and interpretations to reveal themselves at various levels[86]. The repetition of this process, the constant reinterpretation and transcreation of signs, no longer as the source designation of the object, but as the signs of subsequent signs in the processes of semiosis – leads to infinity.

This reasoning can be translated into musical language. For example, a variation technique as a continuous iteration of the **O-S-I** triad of one's own sound ideas will be a form of infinite semiosis. At the same time, it may happen that the sign will interpret other people's sound ideas as a quotation, reference[87], or transcreation of more complex ideas (e.g. the psychological aspects of the forms and structure of the Baroque suite and the idea of a *concertante* for their contemporary version in Andrzej Kwieciński's *Concerto. Re Maggiore*).

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[85] *Ibid.*, p. 212.
[86] *Ibid.*, p. 213.
[87] *Cf.* J. S. Arias-Valero, E. Lluis-Puebla, *op. cit.*, pp. 92 and next.

After all, it may be the case that the sound structure is a representation of a non-musical concept, e.g. a painting (as it is in the music of Marta Ptaszyńska), a novel (Paweł Mykietyn's *Szklana Góra*), symptoms of illness (Katarzyna Taborowska's *Chorea*), etc.

Peirce assumes the identity of the manifestation with its effects, so logically there is a possibility of translating a categorical judgment into a hypothetical judgment, making it possible to perform an infinite semiosis. This can be illustrated by the following two examples:

(1)

A: A smooth transition between one pitch and another over time, noted as **S:**

 =methodologically= **S**: the psychoacoustic response of

hearing a prolonged descending sound, notable as **S:**
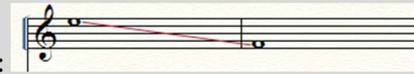
Figure. 1. *Glissando*. Example (1) illustration.

Peirce's pragmatic maxim confirms the assumptions of the Trusslit experiment already mentioned. The methodological axis of the analogy runs along the possibility of competence compatibility between the two entities.

(2)

An example of semiosis carried out gradually through iconic transformations and drawing logical consequences from the pragmatic maxim can be described on the basis of my own perceptual reflexes as follows:

inhalation-exhalation = air whistling rising and falling = change of silhouette arrangement from tense to relaxed = tension-relaxation = instability-stability = dissonance-consonance = harmonic succession (dominant)-*nota finalis* (tonic) = non-harmonic and harmonic spectrum = *accelerando-ritardando* = intensification of sound action- thinning = Shepard's tones = (...) = *glissando*.

Peirce's way of thinking allowed me to organize the principles of constructing the "grammar" *of visibilium et invisibilium*, including those related to the creation of gestures and their transformation. In this sense, the process of precomposition was dedicated to establishing a dramaturgical axis and conceptualization, and consequently to the search for gestures that would favor both processes. Since one of my first assumptions was to use the *Schlieren Optics* streak imaging apparatus as the primary source of gestures (or even a single gesture, i.e. the extraction of a sound wave, its visual "exit" from the instrument, revealed in the streak imaging), my conceptual, expressive, but also purely sonic intentions had to be

coordinated with the physical possibilities offered by the apparatus, but also with the search for contexts in which they can be embedded. In the end, what I physically did using the apparatus was also taken out of its original context because, due to the high sensitivity of the elements that make up the apparatus, I could not use it in the form of *a live video* during the concert, so I had to record it in the form of *a fixed video-playback* beforehand. I write in detail about the transformations of gestures and their contextualization later in dissertation.

1.3.3. Concepts of generative grammar: Noam Avram Chomsky, *GTTM* by Fred Lerdahl and Ray Jackendoff; Stephane Roy and his *GTTM* reinterpretation

Recalling Herder's theory of language and translation, as well as Peirce's intersemiotisms and semiosis, it is impossible not to refer to Avram Noam Chomsky's generative grammar, i.e. "a linguistic theory that understands grammar as a model of human linguistic competence in its two basic manifestations: **the ability to produce and the ability to understand the correct text in a given language**"[88]. The assumption here is that language is an infinite set of potentially infinitely long sentences. Their generation is based on hierarchical syntactic models (also phonological and semantic), having the following characteristics: material, because determined by the structure of the mind, explicit (clearly formulated), native, i.e. available competently to every human being from the moment of birth and biologically determined, transformative in its constant transformation of simpler constructions into complex ones, which enables the infinity of the system, and universal, because common for all human languages[89]. The revealing of grammatical phrasal structures in Chomsky's theory takes place through the use of characteristic tree-oid diagrams revealing the systemic hierarchical character of the analyzed sentences, and in particular the levels of their structure: the deep structure, i.e. the semantic-logical layer, and the surface structure, i.e. the phonetic-physical layer.

Interestingly, Chomsky's concept has already been creatively implemented and adapted to the needs of musical analysis in the concept of the so-called **generative theory of tonal music (*GTTM*)** expressed in Fred Lerdahl and Ray Jackendoff' s *Generative Theory of Tonal Music* and its development in a more universal direction by Stephane Roy.

Like linguistic generativism, *GTTM*'s generativism encompasses two elements: the production and understanding of structures in a musical "language" (sign system). Firstly, it is

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[88] [entry] *generatywna gramatyka*, [in:] *Encyklopedia PWN* [source: https://encyklopedia.pwn.pl/haslo/generatywna-gramatyka;3904773.html [accesed: 01.05.2023]. [translation after Encyclopedia done by myself]
[89] N. A. Chomsky, *O naturze i języku*, transl. J. Lang, Poznań, 2005.

the ability to generate an infinite number of potentially infinitely long works of music (sound structures) from a finite number of elements (rules, procedures and codes). Secondly, the **universality of generative rules** (compositional grammars and listening grammars, natural and artificial grammars, transformational, processual grammars such as spectralism and surrogate, subistitute or permutation rules such as serialism) **enables the listener to (unconsciously) organize musical information into a coherent, hierarchical, formally understandable whole (mental representation).**[90]

The aforementioned universality of generative rules reveals the dual nature of each grammar. The grammar of composing (producing) is the flip side of the grammar of listening (comprehension). It is because of this relation that it is possible to distinguish between the naturalness and artificiality of grammars: what goes beyond the permissible compositional patterns is most likely incomprehensible to the listener. On the other hand, what is permutative, i.e. speculative, is rather hierarchically flat (although often intellectually satisfying), while what is process-oriented and perceived as more "musical" shows hierarchical depth (and at the same time may be too "obvious" for the listener).[91]

GTTM procedures organize the processes of analysis of the elements of the musical work by establishing a hierarchy based on the criterion of morphological formation. On this basis, Lerdahl and Jackendoff distinguished fifty-six grammatical rules divided into four categories, which show how structures are isolated in the listening process and how relations between them (including hierarchical ones) are established[92].

In this approach, however, the composer's grammar and the grammar of listening are not able to reflect the conceptual level, or more broadly, the level of Lehmann's relational music. This strategy will be ineffective for understanding the perceptual phenomena of John Cage's *4'33"* or Steve Reich's *Pendulum Music*. The communicative role of the hierarchy does not concern the symbolic level, and especially the metaphorical iconicity, perceived in *GTTM* quite suspiciously or even utopianly, but rather inclined to perceive sounds in relation to the intuition of the listeners, which appear during reception and model the understanding

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[90] F. Lerdahl, R. Jackendoff, *A Generative Theory of Tonal Music*, Cambridge, Massachusetts, 1983, pp. 7 and next. *Cf.* S. Roy, *L'analyse des musiques electroacoustique*, Paryż, 2003, pp. 393-395.
[91] F. Lerdahl, *Cognitive Constrains on Compositional Systems*, [in:] *Contemporary Music Review*, vol. 6, 1992, pp. 101 and next. Nb. Roy points out at this point that the composer should "listen" to his grammar and returns to this many times as a kind of "motto" of *GTTM*. S. Roy, *op. cit.*, pp.391, 393, 395, 401.
[92] *Cf.* F. Lerdahl, R. Jackendoff, *op. cit.*, pp. 345-352.

of the musical work. These are especially psychophysical experiences in their simplest possible sense[93].

At the heart of the generative approach, as Roy points out, is **the issue of stability and instability**. The categories of tension and relaxation are the basic criterion for ordering hierarchical levels through the use of the reduction test. This idea stems from theoretical works on the analysis of Heinrich Schenker[94] or Leonard B. Meyer. In a nutshell, the **reduction test** (cf. audiovisual contract) is an attempt to map the process of listening, to arrange sound events into a coherent, hierarchical structure, which is why it is based on the principles of grouping on the one hand, and on the principles of reduction of transformations taking place in the work to the most important units on the other. The results of the reduction test clearly show the relations in tree-like plots, similar to Chomsky's plots[95].

GTTM groups the fifty-six rules of "natural" grammar into the following four categories:

(1) **Grouping structuring**: rules that allows to group smaller particles in a musical work into larger hierarchical wholes[96];

(2) **Metric structuring**: rules establishing a hierarchical structure of times (meters) ordered according to the presence of accents[97];

(3) **Principles of reducing the time-span**: i.e. indicating the most stable units in the musical work horizontally (in time) and vertically (pitch, harmony, etc.). The procedure allows to determine the hierarchy of significance of "events"[98];

(4) **Principles of prolongation reduction**: i.e. vertical division into structural regions (a) according to the construction of tension-relaxation, continuity or progress, structural "openness" or "closure" of the unit, and (b) by determining the degree of assignment of units to other units, i.e. from their dependence to independence[99].

In Peirce's triad of semiosis, the grammatical system would correspond to the sign, which is not hidden by the authors of *GTTM*.

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[93] F. Lerdahl, R. Jackendoff, *op. cit.*, pp. 1 and next.; S. Roy, *op. cit.*, p. 392.
[94] The Schenkerian analysis itself, in its most important assumptions, retains an ideological connection with Chomky's generative grammar, although it seems that both concepts have developed independently of each other. This connection is especially visible in the reductive attempt to reveal *Ursatz* as a deep structure. More about this in: J. A. Sloboda, *Muzyczny umysł*, transl. A. Białkowski, E. Klimas-Kuchotowa, A. Urban, Warszawa, 2002, pp. 13 and next. Moreover, the authors of *GTTM* themselves do not hide their admiration for Schenker, and their texts were written shortly after Sloboda's text, in which the author pointed out the ideological kinship of Schenker's and Chomsky's concepts.. *Cf.* F. Lerdahl, R. Jackendoff, *op. cit.*, p. 111.
[95] S. Roy, *op. cit.*, p. 396, pp. 416 and next.; F. Lerdahl, R. Jackendoff, *op. cit.*, p. 106.
[96] *Cf.* F. Lerdahl, R. Jackendoff, *op. cit.*, pp. 37 and next.
[97] *Cf. Ibid.*, pp. 68 and next.
[98] *Cf. Ibid.*, pp. 106 and next.
[99] *Cf. Ibid.*, pp. 125 and next.
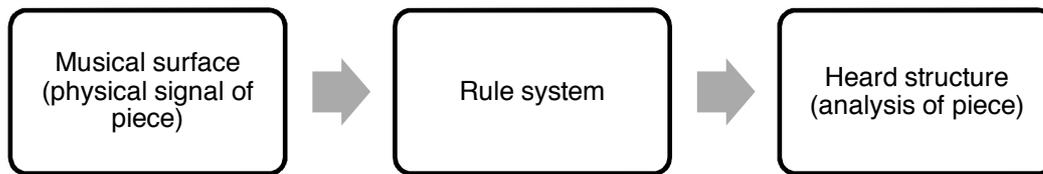
Figure. 2. Perceptual scheme of a musical work according to Lerdahl[100].

GTTM is dedicated to "natural" tonal music and is based on the assumption that the triad of basic elements of a musical work (sound material in the horizontal aspect, i.e. pitch, vertical aspect, i.e. harmony, and temporal aspect, i.e. rhythm) are hierarchical, while the others are not[101]. For this reason, this theory has been criticized as impossible to apply to electroacoustic works (Wayne Slawson)[102] or to other, according to the creators of "unnatural" systems, including, for example, only to a very limited extent applicable to serialism[103]. For these reasons, Cook described Lerdahl's stance as normative extremism[104]. GTTM, according to the assumption of the creators and under certain conditions, can also be applied to the color[105], which also raised doubts related mainly to the determination of hard rules of color generation. In relation to such an ephemeral element of the work, difficult to describe and analyse (as Herder has already noted), this is a bizarre assumption.

Despite these problems, the main paradigm, determined in a broad sense by the universal balancing act between what is stable and what is unstable, encourages the search for broad interpretations. This potential of applying GTTM to a wider than just tonal range of works, especially electroacoustic ones, was noticed by Roy[106]. This method can be used in a functional scope, using a broad understanding of the category of stability-instability, morphologically described by the authors of GTTM as semiosis (consonance *vs* dissonance / distance in the circle of fifths / great perfect cadence *vs* deceptive cadence, etc.) and, in addition, such other functional pairs as accumulation–dispersion, acceleration-deceleration, intensification-mitigation, presence-absence, antecedent-successor (call-response)[107].

Roy proposes an **open system of triads** distinguished by their ability to evoke a sense of stability, instability, and a "rotating" category, defined contextually, and thus capable of functioning as a stable or unstable element. It groups them into three categories:

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[100] *Cf.* F. Lerdahl, *Timbral Hierarchies*, [in:] *Contemporary Music Review*, vol. 2, 1987, p. 136.
[101] *Ibid.*, pp. 137 and next.
[102] *Cf.* S. Roy, *op. cit.*, p. 413.
[103] *Ibid.*, p. 414.
[104] N. Cook, *op. cit.*, p. 241.
[105] F. Lerdahl, *Timbral Hierarchies*, *op. cit.*, pp. 138 and next.
[106] S. Roy, *op. cit.*, pp. 422 and next.
[107] *Ibid.*, p. 418.

(1) **The category of orientation**, i.e., the sense of stages in the flow of musical movement;

(2) **The category of process**, i.e. a sense of general perceptual essence;

(3) **The category of rhetoric** in the sense of a certain basic syntactic function of the semantic musical construction (although not in the sense of "carrier"-"content", but rather in the sense of descriptive "poetics", e.g. the construction call-response).

Based on stable and unstable elements, Roy simultaneously formulates the hypothesis that **hierarchical analysis is the analysis of unstable units (objects),**[108] because stable units would reduce the analytical value. In addition, Roy sets a set of his own rules based on *the GTTM* and following some of its grammar rules.
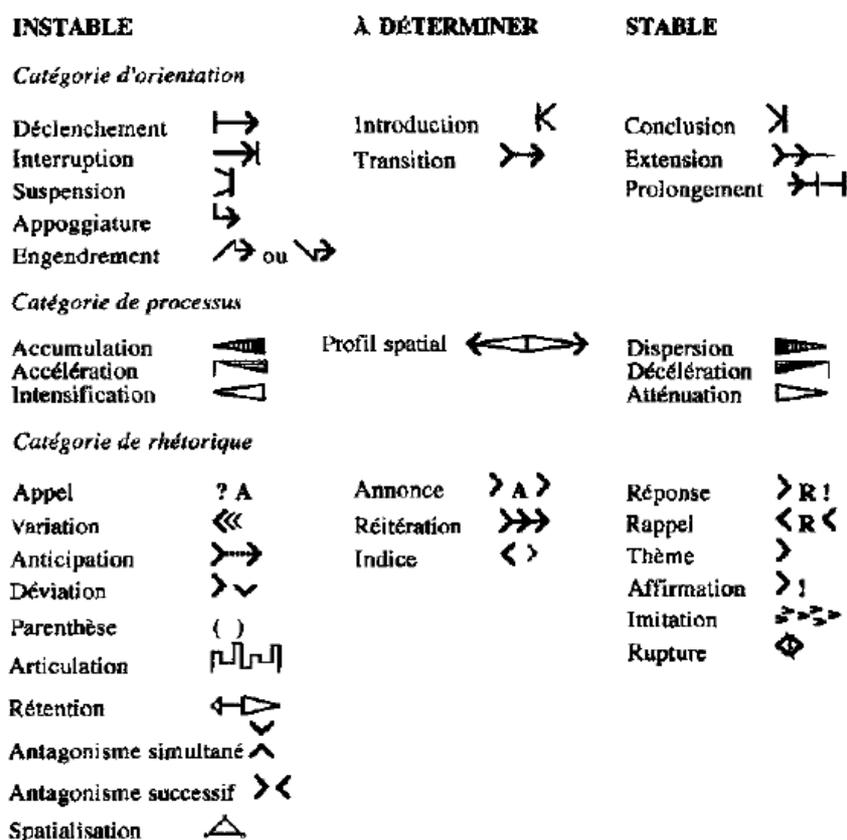
Figure. 3. Roy's Categorization of Unstable, Stable, and Contextual Structures and their Symbolic Notation[109].

It is impossible not to notice that the similarity of theoretical and methodological assumptions (with the possible exception of the need to define grammar rules) of the *GTTM* method modified by Roy may resemble many other concepts. The idea of Denis Smalley's spectromorphology should be mentioned in particular. It refers to the categories of stability

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[108] *Ibid.*, pp. 418-421.
[109] *Ibid.*, p. 419.

and instability so important for *GTTM*, focusing rather on refining the relation to movement perceived on the plane of various metaphors of spatiality. Hence the distinction between the categorization proposals, which are open-ended[110].

Movement remains a central phenomenon, which is why Smalley draws attention to (1) **four perceptive elements of the shape of the musical motion**[111]: (a) its rootedness, (b) its launching, (c) its energy and inflection, and (d) its internal texturing. To determine the forms of motion and its transformations, Smalley establishes a describable (2) "life cycle of sound"[112] and (3) **a typology of motion and growth**[113]. The author also points out (b) seven characteristics of motion and (c) a proposal for the typologization of textural motion[114].

The potential of Smalley's thought can be easily observed using the example of Jacek Targosz's description of harmonic motion. The main role is played here by centrifugal (subdominant) and centripetal (dominant) movement[115]. However, this idea can be taken to a higher level by trying to answer the question of how the above-mentioned basic relations of these motions affect its general grouping, i.e. a shape of a higher order, and whether it can therefore be described, for example, as rotating, vortex, or pericentral.

The highlighted categories refer constantly to the feeling of stability and instability (figure-gesture *vs* . background-texture). In this sense, both Roy's and Smalley's proposals can be read complementarily, with Smalley's concept as detailing the ideological direction of Roy's concept by isolating the basic "poetics".[116]

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[110] D. Smalley, *Spectromorphology: Explaining Sound-Shapes*, [in:] *Organised Sound,* vol. 2, no 2, Cambridge, pp. 115-124.
[111] *Ibid.*, pp. 115 and next.
[112] Onset-continuant-termination. *Ibid.*, p. 112.
[113] And so, the author indicates (a) the types of motion itself - unidirectional, bidirectional, multidirectional, reciprocal or cyclic/centric, along with their subtypes distinguished according to his feelings and experiences. In the category of unidirectional motion, the subtypes of ascending, plane or descent motion are indicated. The category of reciprocal motion includes: parabola, oscillation, undulation; in the cyclic/centric category - rotation, spiral, spin, vortex, pericentrality, centrifugal motion. In the category of bi- and multi-directional motion, dispersion and agglomeration, contraction and dilation, convergence and divergence, exogeny and endogeny motion types are included.*Ibid.*, p. 116
[114] *Ibid.*, pp. 117-118.
[115] J. Targosz, *Podstawy harmonii funkcyjnej*, Kraków, 2004, pp. 29 and next.
[116] I consider the above-mentioned methodology to be very effective, but many more have been being developed. Here I would especially like to emphasize the importance of Krzysztof Szwajgier's theory and methodology of unistic music. Although the author himself uses the concept of gesture many times (e.g. "gesture of variety", p. 32), he also lays theoretical foundations for other, important from my perspective, directly gestural phenomena, specific to unism as a style and technique, namely the problem of texture form, line shaping (zone, projection, band), beam (disposition, pattern, set). Szwajgier's extremely accurate approach to unistic grammar would also, if necessary, be adapted to help describe other types of movement in stylistically and technically different musical works. *Cf.* K. Szwajgier, *Obrazy dźwiękowe muzyki unistycznej. Inspiracja malarska w twórczości Zygmunta Krauzego*, Kraków 2008. Publication wchich is also important to me is E. Tarasti, *Semiotics of Classical Music. How Mozart, Brahms and Wagner Talk to Us*, Berlin, 2012, which, from the *soi-moi* philosophy and Schenkerian analysis, derives and shapes the models of *will, can, know* and *must* in musical works, of which *must* focuses on the problem of "grammar". There are also much less comprehensive proposals to mention here, such as: *Cf.* A.

Following Roy, I see as important in my own artistical work the distinction between stable and unstable units, as well as the achievement of the synthetic third category, i.e. the impression of dynamistics[117] by shaping the figure-background relation in such a way that it could be attributed to the relation of impulse and resonance, or the relation of object and shadow. On the one hand, dynamistics suspends the entire sound event beyond the broadly understood "gravitational" force, and on the other hand, it allows for a momentary, eventful return to this "gravity".

This is how the first movement of *visibilium et invisibilium* is shaped[118], in which, in order to maintain the essential legibility of the gestures, I limit the motivic or variational transformations[119], and replicate the gestures in a slightly changed form, most often modifying one, sometimes two parameters[120], which in itself gives the impression of turning the dramaturgy of the action inward.

At the same time, the gesture as a figure is contrasted with a kind of heterogeneous, vibrating, colourful background, which, through its features, gives the impression of steady dynamic and dynamic statics.

Lewis, X. Pestova, *The Audibile and the Physical: a Gestural Typology for 'Mixed' Electronic Music*, [in:] *Meaning and Meaningfulness in Electroacoustic Music*, Sztokholm, 2012.

[117] Szwajgier's neologism, which Wielecki willingly uses. *Cf.* T. Wielecki, *Kompozycja dynamistatyczna* for chamber orchestra (2015), *Kompozycja dynamistatyczna II* for chinese traditional instruments (2015). At the same time, it was the subtitle (leading idea?) of the 58th International Festival of Contemporary Music Warsaw Autumn in 2015 (presided by Wielecki at that time).

[118] Intermedial sound spectacle for a sinfonietta-type orchestra, with a single cast; (instruments with varieties, small instruments and objects: flute, oboe, clarinet, bari sax, bassoon, horn, trombone, percussion, piano, harp, accordion, string quintet), amateurs ensemble, light, dance, audio- and video-playback.

[119] Variations has always been important to me, but now I am looking for its meta-levels, higher-order complexities: semioses of musical gestures.

[120] Szwajgier called a similar understanding of gesture "replication". Due to the lack of a direct definition, I quote the entire context of his statement: „(…) Volatility and unpredictability dominate, not modernist (differentiating) however (as it was in post-serial avant-garde), but postmodernistic (distinctive). We get diversity bricollage (accumulations) rather than collage (juxtapositions), so – although nothing is repeated – this differentiation is sometimes based on an obsession with repetition. Nothing wants to be "pretty" here, but the role of "objects" rejected-found» They perform both unconventional articulations and simple instrumental 5-finger-etudes. The musical narration does not lead, but only suggests: more and more connecting and disintegrating configurations of sounds (…).The listener, deprived of simple narrative associations in this situation, gains in return something valuable: the freedom of his own integration of the musical meanings of the work. The matter of the seemingly chaotic work then reveals itself as a coherent figure, carrying in terms of communication. Complexity turns out to be style. (…) No one is perfect, nothing is perfect. Only the recipient (perfect one?) can make them so." *Cf.* K. Szwajgier, [in:].: *Muzyka Polska Dzisiaj – Portrety Współczesnych Kompozytorów Polskich – Lidia Zielińska*, polmic 090 / PRCD 1742, 2014 [translation after Szwajgier done by myself].

Figure. 4. Gesture replication. *visibilium et invisibilium,* mm. 59-64 (reduction).

Figure. 5. An example of dynamistic layers. *visibilium et invisibilium,* mm. 20-22[121].

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The intention is not "to achieve the state" but "process of acheving" it continuously. This process consists of three phases: (1) momentary intensification, preparation (stabilization), (2) "point" launching of the process (stability) and (3) its static decay (dispersion).

Figure. 6. Stabilization, stability and dispersion processes. *visibilium et invisibilium,* mm. 19-21 (reduction)[122].

Such dynamistatics can be shaped at different levels of the artistical works: not only at the level of texture, but also at the level of the processes of the work as larger wholes, i.e. higher-order units, or specific unidirectional minor lower-order processes. Such are the gestures of *accelerando* and *ritardando*, which break the uniformity of the perceptual

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[122] Stabilization process marked in blue, "launching the process" – green, resonance – orange.

perception of time, i.e. on the one hand the sense of stability determined by the passage of successive *BPMs*, and on the other hand, the perceptually perceived impression of stratification, condensation, dilution of the temporal intensity of processes. On this lower level, these gestures are an expression of dynamistic thinking.

Figure. 7. *Ritardando* gesture. *visibilium et invisibilium*, mm. 59-63 (reduction).

In addition to collecting gestures, the precomposition process was devoted to constructing a model of the proportions of stages in the artistic work. At the same time, I had in mind the concern for perception and building comfort in the recipient, but also ordering these processes according to some principle. The whole piece is composed in temporal proportions approximated to the "shortening", reversed descending Fibonacci sequence, where each of the movements with a different title has its own separate ideological, expressive and perceptual function[123]:

> I: visualization of the sound [introductory movement, raising expectations];
>
> II: materializing, gesturing the relation of word and sound [coupling movement];
>
> *attaca;*
>
> III: visualization of meanings and dispersion of contexts [narrative movement];
>
> IV: observation of hidden acoustic forces in sound (acoustic beats) [resting movement];
>
> *attaca;*
>
> V: channeling the expectation, i.e. reaching an acoustic climax and exiting it [narrative movement];
>
> VI : dispersion of sound, word, meaning, i.e. reaching the culmination of meaning [concluding movement]

Figure. 8. Schematic and functional diagram of the macroform in *visibilium et invisibilium*.

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[123] Here, without going into details, I use a simplified description of the psychological functions of form expressed by Witold Lutosławski and based on the concept of Witold Maliszewski in his analysis of Beethoven's sonata form. *Cf.* W. Skowron (ed.), *Estetyka i stylu twórczości Witolda Lutosławskiego*, Kraków, 2000.

I	II	III	IV	V	VI
13'49"	9'39"	6'41"	3'19"	2'24"	1'34"
~13	~8	~5	~3	~2	~1

Figure. 9. Temporal schema of the macroform in *visibilium et invisibilium*.

The whole piece is framed by ambient music that lasts before the first beat and after the last one, aimed at establishing a community and orienting the listener from the very beginning to a multifaceted perception of the work. In other words, it is about "immersing" it in the space of sound, both spectral (rustling, pulsating drone) and physical (scattered sound "islands" among the audience). At the same time, ambient is a disturbance in the legibility of the opening and closing gestures of the piece. One could say that, in a sense, my piece is supposed to never begin and never end on a perceptual level.

At the same time, the first movement is a miniature mock-up (maquette) of the whole, the segments of which are also derived from the time approximations of the Fibonacci sequence, although this time increasing, and used by operations on the tempo to achieve the impression of smooth but imperceptible acceleration.

I try to consistently build a compositional grammar based on the grammars of listening, and at the same time introducing coherence of the means and solutions used on many levels. An example is the way of achieving and discharging the culmination as a higher-order assembly, similar to e.g. one-way gestures-processes of a lower order, determining the phases of the first movement (crystallization of the state and dispersion at the moment of crystallization). Not only because of the quality and intensity of the events that preceded it, but also because of the smaller, previously built versions of the central climax, which imply its quality, the idea of a split and prepared climax is relevant to me now.

Duration	1'06"	1'11"	1'39"	31"	40"	57"	1'05"	26"	16"	12"	1'24"	12"	3'52"
Measures	1-3	4-19	20-48	49-58	59-73	74-92	93	94-102	103-108	109-125	126-135	136-141	142-
Tempo (BPM)	-	53	55	58	63	71	(71)	Rit.	84	105		139	120
Fibonacci sequence proportion	-	1	2	3	5	8	-	-	13	21		34	-
Tonal Center from Credo III	-	C	D	F	E	C	D(altered) =D sharp	C	(C)	(C)	(C)	(C/C half sharp)	(C sharp)
Syllables from Credo III	-	vi-si-	bi-li-	um	o-	o-	o-mni-	um	et...	-	-	-	-
Averaged dynamics	pppp	Ppp	pp	p	Mp	Mf	F	f-p	f-pp	f-ppp	ppp->	fff	
Sound Quality (Orchestra)	drone	noise	Noise grains	Noise + grains + waving	Proper sound	Pitch, Noise, Harmony	climax1	Striking harmony	cont.	cont.	climax2	oscillation between spectra	tacet
Sound quality (amateurs ensemble)	Drone (Music Boxes)	cont.	Drone (Computing – Cloud)	rustling	tacet	tacet	rustling (computing – cloud)	rustling (improvisation)	Cont.	Cont./tacet	rustling (improvisation)	Bell-like instruments	tacet
Sound quality (electronics)	Granulation	cont.	cont. breaths, voices	cont. voice glitch, breaths	Cont. glitch voices breaths.	Bach glitch.	cont.	cont.	Breaths	cont. voices Bach	cont. cont. cont.	culmination	Piano Glitch friction
Video -playback (convolution point attack)		1:1	Slower	Slower	Slower	Slower		Slower	Slower	Slower		very slow, Visual Disclosure of the Sound Wave	

Figure. 10. Schema of I movement in *visibilium et invisibilium*.

1.4. Observations on margins about the ways of reading sound motion

A physicist will define **motion** solely as **the change of position of the object over time within a particular frame of reference**. Applying this term to the musical field, motion will also include sound or music, with the proviso that it will be the motion of an acoustic wave, including all the relations in which it may be involved and its characteristic behavior, both purely spatial, spectral or periodic. The second area of interest for the physicist will be the physical movement that produces the acoustic wave. He will also look (albeit with much less interest) at the consequences of the properties of this motion for the shape of completely different systems of signs, e.g. the tonal system with its principles converging – or, as some prefer, directly derived – with purely acoustic observations.

Such an understanding of motion is contradicted by Hanslick's belief that, using the power of metaphor or analogy, certain aspects or effects of this movement are transferred to other, non-Euclidean dimentions, often including virtual ones, e.g. contrapuntal motion, harmonic motion, spatial (sound localisations) motion, textural motion, etc. This is despite the fact that they are embedded in both objective and subjective perceptual perception. Carrying out further metaphorizations of motion causes the concept to spill over into other areas of phenomena: cognitive, cultural, linguistic, semiotic, which otherwise have their own "poetics" expressed in language and ways of reasoning. It is already apparent that even the **working definition of a gesture as a motion (movement) having some meaning** is a problem: since virtual motion is already giving meaning to the phenomena generated by physical movement (motion), then this metaphor as a sign is given another sign. As a sign, this metaphorical movement (motion) also has its various traditions of interpretation, e.g. the Platonic or Aristotelian one.

Thus, at the outset, a picture of a complex weave of both cultural naturalizations and already naturalized cultural categories is outlined, referring to various values and parameters, related in a particular way to time, space, and psychophysical and social phenomena. The latter, in turn, are subject to the activities of artists within the framework of various systems of signs. In this situation, a return to more physical or biological approaches to movement (motion; as is the case with Denis Smalley, for example) creates a kind of arc along which we return to the starting point. On this path, the most important thing seems to be the awareness of the inevitable existence of these discrepancies.

From the content quoted in this chapter, I accept what does not seem to problematize this weave, but to explain it, i.e., firstly, the awareness of the "translational", "semiosis" nature of the apprehension of movement (motion), based on certain potential perceptual

communities. It is also a very interesting perspective for further in-depth research. At the same time, as the case of *GTTM* shows*,* and where, I believe, the value of "naturalness" was erroneously attributed to the tonal system, **any attempt at a rigid systemic description of the rules for generating the quality of movement (motion) seems to quickly lose its value** (which, by the way, Herder has already predicted). **Therefore, it seems necessary to build open or self-reproductive descriptive systems and systems of construction of musical works, i.e.** equally strongly influencing **grammars based on psychophysical reflexes** (Herder's monadism, the perspective of form equated with the auditory perspective in Hanslick's) and **cultural** (naturalized cultural categories, semiotic theories). In this respect, Roy's attitude of adapting the *GTTM* to much wider needs seems interesting.

The musical gesture as a higher-order composite of musical movement (motion), of logical necessity, will always refer to the categories and problems that the second of the above-mentioned will introduce. The disorder in the understanding of musical movement (motion) does not lead to an orderly approach to the methodology of studying the musical gesture. At the same time, all of the research perspectives briefly described here require further, in-depth studies, which should be all the easier because these perspectives are interesting enough to be of interest to a wide range of researchers.

2. Musical gesture – basic paradigms of perception

2.1. The Musical Gesture as a Reflection and Synthesis of Historical Musical Processes

Ordering the perception of the creative processes taking place in the world of music and the hermeneutic or aesthetic processes that accompany them from Braudel's perspective[124] allows us to grasp their much broader perspective, their participation in it, their attitude to the reality already accomplished, to history, and also, in a limited extent, to try to predict their role in future events and the direction they set. be which they imply. One of the philosophical theories, namely the theory of eternal return (palingenesis of the worlds)[125], proclaims a finite number of ideas which, with the development of knowledge and technology, are articulated over and over again, building an infinite spiral of reducible semioses of the original ideas, between which new relations are constantly being built[126]. [127]

Such a perspective requires the search for unifying points that would reveal a deeper meaning of incidental events, which are seemingly eventual, thus reminiscent of the Greek formulation of *καιρός [kairós],* "this very moment". However, they allow us to capture the reflection of larger processes, cyclical, long-distance events, counted in decades, thus resembling the Greek *Χρονός [Cronos, Chrónos]*. This, in turn, is simply inferior to duration, the long term —*αἰών [aiṓn]*—which is a useful concept for describing the manner in which eternal ideas exist.

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[124] Fernand Braudel coined the concept of the long term in a text beginning with the famous dramatic sentence about the crisis of science in his time, i.e. in 1958. Someone malicious could draw a parallel here with the state of today's aesthetics, music theory and musicology, which are waiting for a new theory of art comparable to Adorno's one. *Cf.* F. Braudel, *Histoire et sciences sociales, la longue durée*, [in:] *Annales E.S.C.*, X–XII, pp. 725–753. Nb. In defense of the crisis of aesthetic theory, it should be noted that cultural studies, linguistics, cognitive science and philosophy also share this condition as the already mentioned situation of "weave", requiring a transdisciplinary approach. Skórzyńska even indicates a "map" of the currently basic new ontologies seeking to alleviate this crisis: (1) Speculative Realism (looking at the intersection of Idealism, as Non-Realism in the Mind-Object identity): (a) Radical Correlationsism, (b) Non-Philosophy, (c) Object-Oriented Ontology (ooo); (2) New Materialism (Neomaterialism searching for collocations between Matter, Technology and Climate changes and the development of knowledge about organic beings): (a) Materialistic Ontology based on the concept of Assemblage and Nonlinear Narrative, (b) Feminist New Materialism; (3) Actor-Network Theory (ANT); (4) Practice Theories. The general direction of these changes is defined by Skórzyńska as "posthumanism". It is easy to see that many avant-garde attitudes among music creators are based on the above-mentioned ontologies or methodologie. *Cf.* A. Skórzyńska, *op. cit.*, pp. 165 and next.

[125] The theory of eternal return was proclaimed, for example, by Heraclitus of Ephesus, Friedrich Nietsche, and - as it would appear from the interpretation of the views on art, including music, quoted in this dissertation - by Jerome S. Bruner or Heinrich Schenker.

[126] After all, you can't step into the same river twice because the water has already flowed away! *Cf.* Heraklit z Efezu, *147 fragmentów*, transl. R. Zaborowski, E. Lif-Perkowska, Warszawa, 1996, pp. 34-35, fragment no 14 [A 45] = 22 B 91.

[127] Being convinced of Hume's observation that mankind is always the same, and in comparison with Herder's vision of the dependence of thought on language, I have no doubt that ancient and contemporary art will always meet at the level of ideas, even if expressed in extremely different ways, because they depend on on knowledge, cultural naturalization and enculturation, and the possibilities of transmission and technology of expressing a given *kairós*.

In the category of long term, I also see the eternal dispute about whether music has the power to refer to realities external to itself, i.e. whether it expresses, transmits, evokes emotions, and if so, how. The views of Aristotle, Plato, Hanslick, or, in the case of Richard Wagner, suggested in this dissertation (section 2.8), almost archetypally express this dispute by means of the positions of their own *Kronos* in this, I believe, unsolvable problem, generating opposite, culturally naturalized attitudes of axioms. There are basically two axioms of these axioms, namely, first, formalism (pragmatism, according to which music can only express states internal to itself), and second, idealism (where music can express states external to itself). Each time, both of them gain new faces in their *Kronos* and *Kairos*, while maintaining their essentially identical ideological core in the perspective of *aión*. Nevertheless, generations of artists and aestheticians are united, which even Hanslick could not deny, to **see music as movement (motion), as energy, as a trajectory, as a synthetic structure, and to take into account the profound influence that music has on man through this movement (motion)**. These are potentially both sensory categories, available in principle to every human being due to the very fact of his or her birth, as well as founded in the perceptual-conceptual apparatus on the basis of the processes of cultural naturalization and enculturation, causing doubts about the limitations of communication.

In my opinion, using the idea of a musical gesture can be a method of solving the problem described above. The common elements of all these attitudes are rooted in the main assumptions of the musical theory of gestures, although they may explain the central statement that gesture is movement (motion) but also communication, i.e. meaning. Following Chomsky, I understand that in its genesis the process of generativism presupposes forms of transformation in order to maintain its vitality, and therefore all positions oscillating around the opposition of black and white will actually be varieties of gray, and the most important concepts of the musical gesture referred to in this chapter reveal this, I think, with all its power. Reflection on the very essence of a musical gesture proceeds along the conceptualization of whether certain categories (such as objectivity, subjectivity, expression, content, intention, awareness *vs*. automatism of the gesture, cultural *vs.* psychocognitive meaning, way of influencing the recipient, anthropomorphicity or opposite morphology, physicality *vs.* virtuality, etc.) are a necessary element of the gesture and whether they provide sufficient flexibility in defining it.

For all these reasons, it is necessary to begin with a reflection on the gesture in general. This is usually done, as I intend to do, beginning with the powerful definition of Hugues de Saint-Victor.

2.2. Gesture in defining Hugues de Saint-Victor (Hugh of St. Victor)

It would seem that the Middle Ages, an epoch emblematically associated with a deep hierarchical split in the system of subordination between the corporeal, the sensual and the spiritual, the metaphysical, is not able to give a satisfactory answer to the question of gesture, since the latter were to synthesize both of these features. And yet, it was precisely the era of various views, social unrest, but also absolute cultural stability that created the space for the aforementioned reflection. This reflection was stretched between two traditions: Augustinian-Platonic and Thomistic-Aristotelian. The first assumed a theological and philosophical perception of the body as a "cage of the soul", often attached to sin. On the other hand, the second of the mentioned traditions assumed the abolition of the sinfulness of the human body due to the fact of the incarnation of the Savior in the flesh of man: created in the image and likeness of God, man embodies in the flesh a reduced image of the Church as the body of Christ, and also the actions of man can show similarity to the actions of the Son of God[128]. It is worth noting, however, that this concept does not completely ignore the flawed nature of the body. The movement of the body seen through the eyes of the Middle Ages expresses instability, temptation, debauchery, while steadiness, slowness, regularity – they evoke the divine, eternal order of the universe.

Jean-Claude Schmitt even calls this period a "civilization" or a "culture of gestures".[129] These gestures express spiritual experiences, emotions, personality, serve communication (because when performed towards and for the sake of another person, they are the foundation of social bonds and religious bond with God), but they are also not devoid of the hierarchy that was omnipresent at that time. Of course, the highest place in this hierarchy is occupied by the theological gesture which, on the basis of the theology of the visible and the invisible, expresses in Augustine a twofold understanding of the sacrament: first, as a sign by which God teaches,[130] and second, as a visible sign (form) of God's invisible grace[131]. Interestingly, along with the shift in the paradigm of perceiving human movement from Augustinian to Thomistic, the perception of the gesture itself also changed: positively valued gestures began to be distinguished only from the 12th c. (because they could control sinful

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[128] Although in the Church itself of the first centuries the consequences of this statement were the subject of a lively debate, the apogee of which fell on the great iconoclasm..

[129] E.g. J-C. Schmitt, *Gest w średniowiecznej Europie*, transl. H. Zaremska, Oficyna Naukowa 2008, p. 12. *Cf.* J. le Goff, *Kultura średniowiecznej Europy*, transl. H. Szumańska-Grossowa, Warszawa 1994, p. 350.

[130] *Cf.* Augustyn z Hippony, *O Trójcy Świętej*, transl. M. Stokowska, Wydawnictwo Znak, Kraków, 1996 [Book XI, issue 2, no 3]; *Cf.* V. Giraud, *Signum et vestigium dans la pensée de saint Augustin*, [in:] *Revue des sciences philosophiques et théologiques*, vol. 2 (95), 2011.

[131] This type of definition of the sacrament, also traditionally attributed to Augustine of Hippo, is preserved in the currently applicable *Catechism of the Catholic Church*, canon 1131.

actions), but those negatively valued, i.e. *gesticulatio*, gestures considered exaggerated or sinful (e.g. laughter with exposed teeth), also remained.

With this paradigm shift, a special hermeneutic discipline is created, the pedagogy of gesture, which contains instructions for religious novices on how to live a virtuous life and thus attain eternal salvation. The list of these rules includes the discipline of dress, gestures, speech, and table. It is in this trend that the definition of Hugues de Saint-Victor is created. However, its synentiality, and the widespread recognition in eyes of both then and now commentators, allows for an extended use of it.

Hugh defines gesture as follows: **"A gesture is a movement and configuration of the members of the body, adapted to each action and each posture (but also: having regard to them, according to measure and variations)."[132]** This definition is confusingly similar to the one defining discipline, i.e. control over the gesture.

Schmitt's interpretation over Hugues de Saint-Victor begins with the observation that gesture corresponds to the invisible motion of the soul and the visible movement of the body. He also points out that the meaning of the gesture is relational, as it lies in the fact that it is noticed by another person[133]. It is also synthetic, because one does not separate the elements or actions from the attitude, the visual from the invisible. Schmitt concludes from this that the possibility of reading a gesture culturally is established by convention[134], which Guerino Mazzola will criticize, accusing Schmitt of drawing far-reaching conclusions and assuming that meaning is an a priori element of gesture, which would make it impossible to even make presemotic[135], informative or cognitive readings of it[136]. In my view, the two attitudes are reconcilable in such a way that **a gesture always communicates information (it contains a data resource) that can be read using a variety of methodological resources, i.e. a dictionary**.

Schmitt identifies four areas of understanding the adaptation of gesture in Hugo's time and environment[137]:

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[132] „Gestus est motus et figuratio membrorum corporis, ad omnem agenda et habendi modum". *Cf.* Hugon od św. Wiktora, *De institutione novitorum* [my own translation after:] C-J. Schmitt, *op. cit.*, p. 187.
[133] *Ibid.*, p. 188.
[134] *Ibid.*, p. 189.
[135] I am using a clichée from the English: presemiotism in the context of describing the attitude towards meaning within the existential semiotics of Maurice Merleu-Ponty and the tradition of reflection created and continued around his thought. I have not noticed in Polish-language publications the use of this or similar expressions to describe the sense-creating role of the body in the experience and perception of art, in which *le corps vécu, animé* is subjectified. Guerino Mazzola often uses this concept as a key one in his own thought, which certainly has an impact on the popularization of this term.
[136] G. Mazzola (ed.), *The Topos of Music III: Gestures: Musical Multiverse Ontologies*, Cham, 2017, pp. 847-849.
[137] C-J. Schmitt, *op. cit.*, pp. 189 and next.

(1) **The idea of appropriateness**: the relation of adapting a gesture to what it signifies;

(2) **The idea of teleology**: a gesture tends to bring about a certain attitude or action;

(3) **The idea of measure**: the limitation of the gesture is tantamount to the preservation of morality;

(4) **The idea of morality**: it is the gesture itself that changes and determines the movement of man.

Adaptation, understood as above, is, I think, untenable in its definite original interpretation for modern man. Dictionary adaptation, understood as "making suitable for specific needs," has changed over the centuries and is no longer entrenched in the morality of Hugues' day. Therefore, the adaptation of a gesture does not necessarily entail the necessity to meet a number of limiting conditions. Their non-observance is no longer subject to strict discipline in order to avoid the depravity of the soul by the trains of the flesh in order to attain eternal life. On the other hand, it may mean the necessity to meet a number of conditions, including limiting ones, in order to make the gesture sufficiently (1) clear (appropriateness), (2) comprehensible (teleogical), (3) limited or emphasized in order to modulate the strength of its impact (measure), (4) exerting an impact on another person (morality) – in a word, in order to shape it communicatively.

The definition of gesture takes into account two components: **the movement of the human body** and the communicative value of this movement, i.e**. the form, configuration** (*figuratio*) of the body members, while the latter are supposed to reveal **the goal, the intention**. As I have already mentioned, for Schmitt, the form, the configuration, due to its visual, figurative and movement-like **expressiveness (**i.e. the **expression of experiences and will)** – implies conventional meanings. Mazzola, on the other hand, proposes to read *figuratio* formalistically as an articulation of the whole, i.e. as a complex, choreographic anatomical system, perceived as a starting point, *an output*. Finally, the gesture also has **an attitude towards the achievement of a posture** (*modum*), which is subject to the shaping of movement by action and attitude, i.e. modalities. This kind of *modulatio*[138] of such a movement can take place through discipline: self-control, or control from the outside. Thus, the **technical value** of the fact that gestures are achieved through concrete human behavior is emphasized here[139].

Hugues' definition can, therefore, be summed up, in the division of its elements into **external and internal,** as well as **movement (motion) and expression** on the basis of

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[138] In other words, "shaping", not to recall the concept of music as *scientia bene modulandi*.
[139] G. Mazzola (ed.), *op. cit.*, p. 847.

antitheses: *motus* as an external, objective movement is contrasted with *agenda* as an internal motion, i.e. intention, intention, movement as part of a larger process and its effects, and *figuratio* as an external expression (arrangement, shape, form of expression) it is contrasted with *habendi modum* as an internal expression (modal shaping by will, emotion, attitude or convention).

Juan Sebastián Arias-Valero and Emilio Lluis-Puebla note that, in a sense, Hugues' definition is pragmatic in Peirce's understanding, and therefore can be interpreted semiotically as a sign (hence it is subject to the processes of semiosis), since treated as Peirce's Thirdness (continuity mediated between two states: source and effect) can be modified, according to the concept of the three phenomenological categories of being and their semioses: **Firstness** as immediacy, quality of substance, **Secondness** as fact and relation (including cause and effect), and **Thirdness** as mediation, representation by means of rules and principles, oriented towards communication[140]. The gesture is supposed to initiate the Firstness, then comes the Thirdness, and finally, as the goal, the Secondness. " The thread of life is a third; The fate that snips it, its second."[141]

Thinking of the semiosis of gestures as Thirdness (the construction of grammatical rules) and Firstness (in terms of expression, emotions contained in gestures as expressive shapes – which Robert S. Hatten writes about as "significant energetic shaping through time"), and as the possibility of manipulating the Other (by isolating gestures, cutting them off from their original context, gravity, intentions) leads to a reflection on the conceptualization of form.

Observing music of composers who could be described as "gestural" leads me to the conclusion that there are two dominant, but opposing types of building contemporary gesture-oriented forms: (1) the sampler type sequences: building sequences of gestures on the principles of repetition and juxtaposition of gestures as closed, unprocessed units in new assemblies, contextual entanglements, a kind of serialization[142]of them and (2) the resulting

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[140] J. S. Arias-Valero, E. Lluis-Puebla, *op. cit.*, pp. 90-91; *Cf.* M. Kilanowski, *O teorii kategorii C. S. Peirce'a i o przezwyciężaniu trudności klasycznej filozofii – na podstawie współczesnych odczytań*, [in:] T. Komendziński (ed.), *O myśleniu procesualnym: Charles Hartshorne i Charles Sanders Peirce*, Toruń, 2003, pp. 74 and next.
[141] J. Buchler (ed.), *Philosophical Writings of Peirce*, Dover, Nowy Jork, 1940 p. 76 [after:] J. S. Arias-Valero, E. Lluis-Puebla, *op. cit.*, p. 91.
[142] For me personally, the pieces of Andrzej Kwieciński, Simon Steen-Andersen and Marta Śniady have this kind of value. What is characteristic of their compositional technique is the regulation of the dynamism of the process, tension-relaxation and expression by increasing and diluting repetitions in time and expanding and narrowing the ambitus (number) of gesture-samples used. This does not mean that these repetitions are not a form of shaping meaning, but they gravitate more towards *ad hoc*, which does not mean unplanned, replication entanglements "looking" for the moment of synchronization of contexts, rather than towards a hard form of logical consequence. One could say that it is basically a variation of the assembly form.

type sequences: building contextual and logical sequences between gestures, building a cause-and-effect relation[143], [144].

These two patterns of thinking are basic for me, and on their basis I build the dramaturgy of Movement III and partly Movement II of my piece. In both cases, the juxtaposition of the type of sampler effect with the type of resultant builds numerous repetitions of a series of gestures, broken by drawing consequences from them. The sensuality of the gesture (the external *motus*, the morphologies of the process, the) is as important to me as the context in which the gesture can be placed as a sign (the internal *motus*, poetics, rhetoric). This is how Movement I (discussed in detail in the previous chapter) or Movement V is structured. This allows me to build *ad hoc* catalogues of semioses of gestures and then apply them according to my associations and feelings.

2.3. Musical Gesture – perspective of Guerino Mazzola[145]

As a free jazz pianist and mathematician at the same time, Mazzola constructed a fairly rigorous framework of musicological and mathematical description for musical gestures. Its interpretation in the logical sense belongs to the theory of categories, being at the same time a generalization of category theory on the theory of topos, and at the same time it incorporates the theory of performance and the description of motion as mathematical formulas made possible by the same basis of operations both musical and mathematical, that is, by **structure**. It should be noted here that Mazzola himself departed from the established algebraic methodology in favor of a topological one in his later work, as he came to the conclusion that the algebraic formalistic structures and procedures described in an algebraic manner did not fully coincide with his musical intentions, i.e. freedom and temporariness, although he found use for *ad hoc* applications, e.g. for the analysis of the conductor's gesture.

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[143] For me personally, the works of Salvatore Sciarrino, Pierluigi Billione, Klaus Lang in their radical representations, as well as Franck Bedrossian and Johannes Kreidler have such value. Despite the impression of assembly, it is a variety of processual form.

[144] Breaking this duality are the proposals of, for example, Beata Furrer, in whose "sampler" and kaleidoscopic forms a cause-and-effect order slowly begins to emerge..

[145] In this subsection, I refer to the mathematical theory of gestures, but I do not intend to suggest that I fully understand the mathematical formulas given by Mazzola, especially in the absence of knowledge of advanced mathematics, such as category theory, without which drawing correct conclusions and realizing them consequences are impossible. Nevertheless, many of the author's conceptual or dogmatic categories are understandable enough to allow me to trace their provenance and place them in a broader context of theoretical and philosophical concepts, even if a number of issues remain elusive to me. For this reason, I refer to the text of Arias-Valero and Lluis-Pueblo as hermeneutical to Mazzola's theory, which brings closer to the mind unfamiliar with advanced mathematics at least some of the meaning of the established mathematical theory of music, expressed less in words and more in equations. An alternative to this kind of half-hearted attempt would be to completely ignore Mazzola's reasoning, which in turn would lead to a serious lacuna, namely the failure to take into account the mathematical justification (even if only as a hypothesis) of a number of gestural issues (e.g. the hierarchical hypothesis).

Logically reinterpreting Hugues' definition, Mazzola understands gesture as a topological gesture: **a directed graph (digraph) of curves in the topological space X formalized by space-time**[146]. The shape of the gesture is determined by a directed graph Γ (a skeleton in space), which consists of arrows and vertices connected to each other, respectively. The directed graph depicts the arrows as continuous curves in X ("embodiment") and the vertices as points in topological space, preserving the configuration of the Γ[147]. On its basis, it is possible to obtain mathematical formulas.
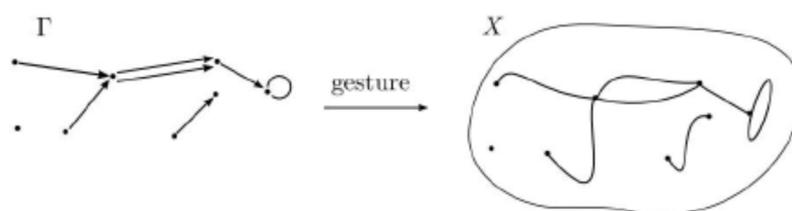

Figure. 11. Topological representation of Mazzola's concept of gesture[148].

The way of definition, as noted by Arias-Valero and Lluis-Puebla, corresponds to Mazzola's presemotic, formal approach: it does not take into account meaning (semiotics) as an element that does not belong to logic, but only defines the parameters and configuration of sound (limbs of the body) by referring it to the topological space described in the context of the configuration of time and space of movement (figuration) of sounds (body). However, the observation is also expressed that the promediation of a gesture in a musical performance must sooner or later lead in a "natural" way to semiotics, which is best illustrated by the operation according to which "(…) formulae are commutativity relations between gestural paths. Conversely, musical activity 'unfreezes' formulae into gestures that can be described as the unfolding of formulae in space-time".[149]

As Arias-Valero and Lluis-Puebla point out, the main issue of such a definition is **the question of topological space,** That is, the possibility of indicating whether in Euclidean space the objects embedded in it are point-decomposed. Mazzola himself sees a problem in explaining from this definition how non-two-dimensional modeling of the human body occurs. Therefore, as a solution, he proposes the construction of hypergestures (gestures of

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[146] J. Arias-Valero, *Gesture Theory: Topos-Theoretic Perspectives and Philosophical Framework*, Colombia 2018, pp. X-XI.
[147] G. Mazzola, M. Andreatta, *Diagrams, Gestures and Formulae in Music, [in:] Journal of Mathematics and Music*, 2007, 1 (1), p. 30; G. Mazzola (ed.), *op. cit.*, p. 914 . *Cf.* J. S. Arias-Valero, E. Lluis-Puebla, *op. cit.*, pp. 93 and next, 110.
[148] J. Arias, *op. cit.*, p. 2.
[149] G. Mazzola, M. Andreatta, *Diagrams…*, *op. cit.*, pp. 24-25. *Cf.* J. S. Arias-Valero, E. Lluis-Puebla, *op. cit.*, pp. 92-94.

gestures[150]) or localization (generalized topological spaces, *Locales*) and the use of the sheaf category of Grothendieck's topos[151]. In this way, Mazzola's ideal can be realized: the recovery of gestures, i.e., substantial movement from morphisms (especially functions), and not only taking into account their beginning and end[152]. For this reason, for Mazzola **the essence of the gesture is the shift, the continuity of movement (motion) between the aforementioned beginning and the end**[153].

Nevertheless, Arias-Valero and Lluis-Puebla emphasize that **the concept of gesture is not strictly spatial in itself**, and they define their rearrangement on two-dimensional digrams as the most important non-spatial equivalent of bodily gestures[154]. Digraphic representation in relation to bodily gestures naturally leads to the introduction of the category **of abstract gestures**. In this sense, all musical transformations are abstract, their essence is not space, but metaphorically understood sound "spatial" shapes[155].

According to the authors, an abstract gesture resembles a skeleton or shape, representing an abstract configuration applied ("embodied") to a concrete context. In this way, topologically, the skeleton can be represented in the form of trajectories and vertices in space, or on a digraph it can be understood as a morphism and an object assigned to a category[156]. From the above, the authors conclude that the category of gestures must not only be supplemented with **hypergestures**, but also with lower dimension gestures, i.e. **simplices** that make up gestures, where the sheaf theory enables the transition from the local to the global. The distinction of dimensions of gestures can be observed, for example, by triangulating Euclidean space (i.e. mapping it with triangles), or by adopting the theory of counterpoint (in the context of the infinity-category), in which, according to Mazzola, even a single interval can be a gesture[157].

The above observations of the authors reveal the fact that even at the mathematical level, a gesture is too complex as unit to be described in a uniform way. **Therefore, it is necessary to look for its simplified or complex subtypes (dimentions)**, of which it

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[150] G. Mazzola (red.), *op. cit.*, pp. 915 and next.
[151] *Ibid.*, pp. 907-908.
[152] J. S. Arias-Valero, E. Lluis-Puebla, *op. cit.*, p. 107.
[153] *Ibid.*, p. 108. *Cf. Ibid.*, p. 94.
[154] The form of such a digram may be a score, understood as a graph of the x(y) function between the pitch and time dimensions. *Cf. Ibid.*, p. 98.
[155] *Ibid.*, p. 98.
[156] *Ibid.*, p. 98. *Cf.* p. 103.
[157] *Ibid.*, pp. 98, 103, 105, 107.

consists or to which it is composed, thanks to which it is possible to capture a greater number of spatial relations[158], and in particular the location of gestures (homotopy).

Mazzoli's theory, according to Arias-Valero and Lluis-Puebla, solves many problems, but also generates new ones, indicating the need to revise some concepts of his theory. This would be useful, if only because of the need to find a presumably existing object that would unite the categories of digraphs and spatial gestures, and explain this complex relation better than the concept of abstract gestures[159].

The authors note that gesture theory is usually, despite its inventiveness and integrity, as well as its universality in everyday life, misunderstood both by mathematicians, who consider it frivolous, and by musicians, for whom it is too formal and therefore useless. For the authors, this branch of mathematics is the easiest to share with the general public[160]. In my opinion, however, **proving many of the intuitions present in the literature on this problem in the field of mathematics** confirms that mathematics, theory and practice of music can be mutually beneficial. The tightening of the relation between them, as emphasized by Arias-Valero and Lluis-Puebla, can also have a more ontic character: every human action is a gesture, the gesture of the performer becomes music, and the gesture of a mathematician analysing music produces theorems (formulas)[161], which in turn can be used to map sound experiences by sonicating them within HCI interfaces[162] and analysing both the musical work[163] as well as performative gestures[164].

In this trend, many theories have been developed, remaining more or less dependent on the concept of the topos of gesture[165]. Mazzola's early definition of gesture (following Hugues) as **a series of postures (as figurations) that have distinct significance for the orientation and position of the object**[166] seems particularly useful. It is a functional definition, focused on the problem of meaning of gesture, in this case resolved as a matter of a set of data that is meaningful to the recipient, using this data in a deliberate way. The purpose of using the acquired parameters is direct or indirect control, i.e. generating and modulating the sound with a gesture, or, to be more precise, reading the parameters of

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[158] However, according to Mazzola, a gesture may have a non-spatial location.
[159] J. S. Arias-Valero, E. Lluis-Puebla, *op. cit.*, pp. 104 and next, 108.
[160] J. S. Arias-Valero, E. Lluis-Puebla, *op. cit.*, p. 110. In this sense, I understand it as giving the mentioned psychophysical activities the rank of conventional activities, and therefore their description, on the one hand, as a specific pràxis, and, on the other hand, the ontological qualities inherent in this activity.
[161] *Cf.* G. Mazzola (ed.), *op. cit.*, pp. 1001 and next.
[162] *Cf. Ibid.*, pp. 1103-1160.
[163] *Cf. Ibid.*, pp. 1235-1262.
[164] *Cf. Ibid.*, pp. 1285-1312.
[165] More: J. S. Arias-Valero, *Gesture…*, *op. cit.*; G. Mazzola, M. Andreatta, *Diagrams…*, *op. cit.*; G. Mazzola (ed.), *op. cit.*
[166] G. Mazzola, M. Andreatta, *Diagrams…*, *op. cit.*, p. 44; G. Mazzola (ed.), *op. cit.*, pp. 900 and next, 909 and next.

various types of gestures with the help of motion controllers, e.g. game pads, phones, wristbands, etc. These require the creation of a model of a gesture-enabled system, which in practice translates into the field of use of kinekts[167].

The only area on which my own approach is connected with Mazzola's is the noticing of a creative opportunity in the field of *art & science*, although I must admit that, unlike the author, I do not base my method on very precise calculations, e.g. by means of the mathematical topos of gesture. It's even conceptually alien to me. Gestures, as I understand them, are shaped in accordance with the humanistic or even compositional methods available to me conceptually and perceptually.

Sometimes, however, I reach for simpler forms of calculations or mathematical inspirations, e.g. the already mentioned Fibonacci sequence as an inspiration for the form. In addition, when I use the CAC, in some cases I acquire spectral and pitch material as well as harmonic processing using the popular *Spear* program and patches built in *the OpenMusic* environment. For the purpose of constructing harmony in a artistic work, I use the form of a calculator: I call it an interval expander, and its operation is based on linear expansion, contraction and inversion of interval, scale, and harmonic structures along the y-axis. Thanks to these calculations, the original pitch structure can be transformed in a smooth and imperceptible way while maintaining its overall proportions. I use an expander to obtain harmonic sequences that perceptually retain the impression of being similar to each other, or, more precisely, replicated from a common source. These are interesting forms of "spectral" dominants or distortions of harmonic series. This is a method that I am still developing, but it can potentially lead to the formulation of more categorical conclusions, becoming in the future a systematized, comprehensive starting point for the height construction of my music.

An example of the operation described above would be the spectral "progression" of violin *arpeggios* :
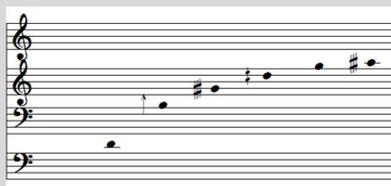
Figure. 12. Extended D-spectre in a ratio of 2.43.

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[167] *Cf.* T. Lis, *Tworzenie muzyki przy pomocy gestów*, Wrocław, 2015, p. 6 [not yet published].

Figure. 13. Extended D-spectre in a ratio of 2.3.
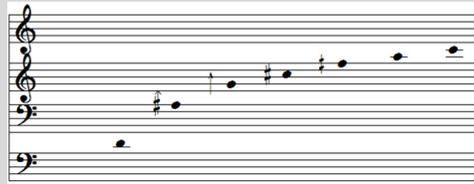
Figure. 14. Extended D-spectre in a ratio of 2.2.
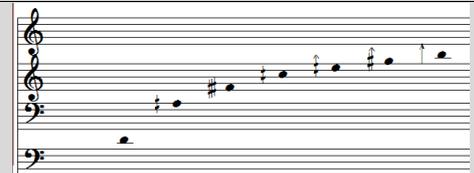
Figure. 15. Extended D-spectre in a ratio of 2.1.
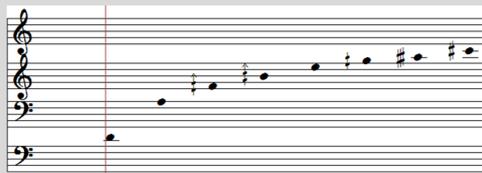
Figure. 16. Extended D-spectre in a ratio of 2.0.

Figure. 17. Extended Dspectre in a ratio of 1.8.
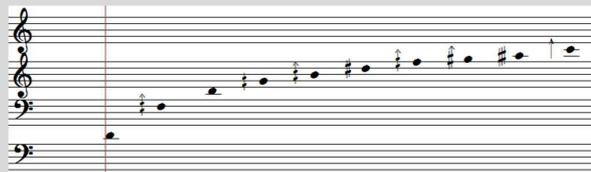
Figure. 18. Extended D-spectre in a ratio of 1.5.
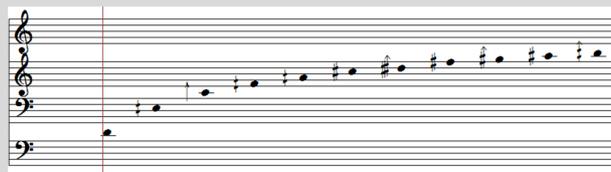

Figure. 19. Extended D-spectre in a ratio of 1.3.
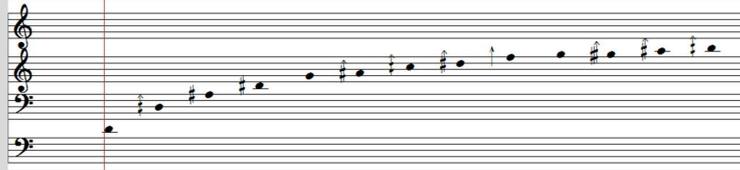
Figure. 20. Extended D-spectre in a ratio of ~1.08.
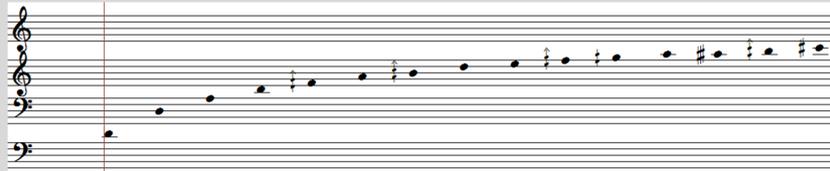
Figure. 21. D-spectre (proportion: 1).

Figure. 22. Spectral progression, *visibilium et invisibilium*, mm. 279-286 (reduction).

In the case of *visibilium et invisibilium*, the described above approach, although not based on a homogeneous system, is not accidental. It is, for example, symbolically oriented (tonal centers borrowed from *Credo III* [I, mm. 4, 20, 49, 59, 74, 93, 94, 103; V, 323-325], or a fragment of Bach's *Violin Sonata No. 3* [I, m. 59]), but equally computationally (examples above), and purely intuitively (e.g. in "modulation" [III, mm. 304-IV, m. 322] harmonic deconstruction on the model of the expander method [e.g. winds, IV, mm. 332-352]). While working on the score, I rejected some of the previously prepared pitch material (e.g. the exact transcription of the sound of the friction of matches as a difficult to perceptually link). The obtained material was read with an accuracy of 1/16 of a tone, and yet it is still only a certain "approximation". That is why I replaced this transcription with e.g. the introduction of the sound of friction of matches directly in the form of samples in the part of the audio-playback [e.g. I, mm. 42, 74, 93, 125, 126, end *of cadenza* in m. 145].

Figure. 23. An example of transcription of the sound of the friction of a match into melic structures (rejected in the course of work on *visibilium et invisibilium*).

Despite the fundamental conventionality of the operations I perform in *visibilium et invisibilium*, it is nevertheless an introductory work, in my opinion and in accordance with all my knowledge, two novelties. First of all, *Schlieren Optics* has not been of interest to composers so far, let alone used in such a way and on such a scale. Secondly, the amateurs ensemble, presented in the score as an important performing force, is in its essence a simplified form **of a laptop orchestra** (for this reason, I invited the Lambda Ensemble – Poznań Laptop Orchestra to cooperate). It is the only piece I know of for orchestra-sinfonietta and laptop orchestra ensembles put together in this way.

2.4. Musical Gesture – perspective of Robert S. Hatten

Hatten primarily assumes the construction of a theoretically useful concept as the foundation of an analytical and interpretative method[168], and his definition of the musical gesture, although founded on analyses of the works of the classics (Mozart, Beethoven, Schubert[169]), is ideologically close to the definition of Hugues de Saint-Victor. The author also notes that certain structures in the musical work are constructed synthetically, thanks to which they transcend the separate treatment of the canonical elements of a musical work. Because of this structure, these structures can be assigned a "purpose" and perhaps also a meaning. Hatten refers to these structures as *embodying sound*[170] and distinguishes musical gestures among them[171], which he defines as **"any significant energetic shaping through time".**[172] Hatten's thought pattern is very specific, because in order to be able to talk about a gesture, it is necessary to meet the following rules together:

> **"Discovery of the gesture:**
>> (1) Gestures are not the performative actions (to generate sound); but they are the meaningful shaping of sounds[173];

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[168] R. S. Hatten, *Interpreting Musical Gestures, Topics, and Tropes. Mozart, Beethoven, Schubert*, Bloomington, 2004, pp. 93 and next.
[169] R. S. Hatten, *Musical Gesture, Lecture 1: Toward a Characterization of Gesture in Music: An Introduction to the Issues,* [source:] *http://projects.chass.utoronto.ca/semiotics/cyber/hat1.html* [accesed: 31.01.2022].
[170] R. S. Hatten, *Musical Gesture, Lecture 3: Embodying Sound: The Role of Movement in Performance,* [source:] *http://projects.chass.utoronto.ca/semiotics/cyber/hat3.html* [accesed: 31.01.2022].
[171] D. W. Scott, *Hattens Theory of Musical Gesture*, Pretoria, 2009, p. 19.
[172] R. S. Hatten, *Interpreting Musical Gestures...*, *op. cit.*, pp. 93, 95.
[173] Hatten adds that it is founded in human affect and its communication, both direct and complex. At the same time, the author excludes machine gestures as they are incapable of reproducing subtle synchronization and contextual differences. So it is an anthropocentric concept.

(2) Meaning of the gesture cannot be transfered only due to notation of the score, although it articulates some of its layers in it;

(3) *Ergo* – gestures as "intention" of composer may be inferred from the musical notation;

(4) A listener can infer the intended gesture basing on musical performance.

(5) Gestures are comprised of any of the canonical elements of music, but it is impossible to reduce gestures to the canonical elements of music'[174].

Nature of the gesture:

(1) Gestures are units of the 'perceptual present', which makes them last around two seconds (this rule is related to the limits of short term memory), and they are nodal ("nuclear") points of what is intended to emphasis[175];

(2) Gestures provide continuity, even when it is not a sonic continuity [176];

(3) Gestures may be hierarchically organized – high-order gestures are comprised of lower-order ones.

Meaning of the gesture:

(1) Gestures in their nature are motivic structures and may serve thematic functions [177];

(2) Gestures may encompass, and help express rhetorical action, so they are related to extra-musical movement or even verbal communication, despite the fact they are not linguistic structures in themselves;

(3) Gestures may point to, or refer to other gestures in order to draw listeners attention[178];

(4) Gestures reveal the intentions and modalities of emotions and actions[179], [180]."

Hatten's understanding of gesture is also reminiscent of Ingarden's reflection on the musical work: musical gestures are an axiom, although revealed in various, often subjective ways (Hatten's perceptual present) at the level of musical notation, performance, reception, and even analysis, while the composer, performer, listener and analyst become full-fledged interpreters[181]. The aforementioned "perceptual present" also indicates that Hatten understands gestures hierarchically grouped by networks of relations as a form of a

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[174] Hatten adds that this is where the synthetic nature of the gesture and its hierarchical nature as a possibility of higher-order complexities.

[175] Gestures are therefore event- and perception-oriented, not process-oriented.

[176] Hatten specifies that it is about continuity, covering various hierarchical levels of gesture with a single act of cognition, that is, perceptual perception as one complex, not a long-lasting sound.

[177] In Hatten's texts, they are therefore subject to traditional compositional procedures, such as motivic variation and processing work, but also to those more generally understood: development, variability, constant evolution.

[178] Hatten's point here is executive and performative gestures, which are also subject to hierarchical groupings, in order to gain the attention of the recipient.

[179] For this reason, as reflections of the psyche (ψῡχή [psūché]) of the creator (composer) it ensure a certain level of truth in the musical work.

[180] D. Puk, *Gest muzyczny – wybrane problemy zagadnienia*, Poznań, 2020, p. 30 [unpublished, master's thesis]; *Cf.* R. Scott, *op. cit.*, p. 19; R. S. Hatten, *Interpreting Musical Gestures...*, *op. cit.*, pp. 93-95.

[181] Therefore, at each of these levels, capturing the gestures may be lost due to incorrect performance of the piece, unclear notation for the performer, auditory inattention, or being ignored in the analysis.

prototypical, lowest, concise and eventual organizational unit ("they last two seconds"), so they could correspond to a motif, although they are a much broader phenomenon than it in terms of the functions they perform.

Hatten's generative way of thinking implies the possibility of generating, i.e. modeling and shading (transforming) gestures indefinitely, while the analysis of gestures is for the author a search for their function. Reducing gestures by their origin leads to a taxonomy based on a limited number of gesture types. Due to the fact that perception is the main object of interest of his method, this taxonomy is ad hoc and indefinitive[182]. Based on Hatten's generative approach, Douglas Walter Scott proposes his own twelve "algorithms" for performing gesture analysis[183].

In Hatten's reflection, interpersonal motor communication, anchored in cultural and cognitive processes, is explicitly linked to gesture. Therefore, gestures can be communicative, significant, deduced (subjective)[184] units as if from the categories of continuity and quality as an expressive pose (vector), a mental pattern of physical activity[185] (iconicity), which through this analogy can have an external meaning (as metaphore).[186] Gestures are thus in the mind like emerging "figures" (Hatten says: "frozen motion") conveying affect and emotion[187]. Nevertheless, it seems that in Hatten's work gestures should be understood rather logically, especially due to the wide range of their interpreters, between whose subjective reactions, views or reception habits there may be a contradiction. Here, in my opinion, lies the greatest flaw in Hatten's reasoning, which is the unification, leading to a hard, dogmatic "objectification" of the distinction of gestures (a single catalogue of reduced types). The second weakness of Hatten's approach lies in the fact that, in creating a methodology for the analysis of gestures, it was essentially derived from and conceived for the music of a certain epoch, which, to use the metaphor of the palimsest, "peeks out" from under the overwritten text. Despite the validity of Hatten's claims and intuitions, the tool created is specialized, concrete, but not universal. Methodology for analysing gestures of other periods, provenances, currents, etc. it can be reconstructed and interpreted from Hatten's position, but it does not follow directly from it.

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[182] R. S. Hatten, *Interpreting Musical Gestures…*, *op. cit.*, p. 124.
[183] D. W. Scott, *op. cit.*, pp. 34-35.
[184] R. S. Hatten, *A Theory of Virtual Agency*, Bloomington, 2018, p. 7 and next.
[185] The categorical nature of this statement can be softened by the concept of understanding the dimensions of movements and gestures in Ludwik Bielawski.
[186] „Even the musical representation of natural objects (e.g., wind, or a storm) may be freighted with a human quality or amalgam of affective motivation (in cases where an agent identifies emotionally with the turbulence of a storm),", polish translation [in:] D. Puk, *op. cit.*, p. 32, based on: R. S. Hatten, *Musical Gesture, Lecture 8: Gesture and the Problem of Continuity*, [source:] *http://projects.chass.utoronto.ca/semiotics/cyber/hat8.html* [accesed: 31.01.2022]. More: *Ibid.*
[187] D. Puk, *op. cit.*, pp. 31-32, based on: R. S. Hatten, *Musical Gesture, Lecture 2: Embodying Sound: The Role of Semiotics,* [source:] *http://projects.chass.utoronto.ca/semiotics/cyber/hat2.html* [accesed: 31.01.2022].

Hatten's definition of gesture as a "significant energetic shaping through time", synthesized by him through the use of various biological, cognitive and cultural systems[188], does not necessarily refer to the movement of the body, or even to the actions that generate movement, which exposes him to the criticism of Rolf Inge Godøy and Marc Leman. Hatten writes explicitly that this definition refers either to a presumed, virtual movement, or to a performed movement, i.e., either a signified or a signifier[189]. A gesture in this view refers to an experience inside the music, through the music (and not outside of it, i.e. such as the gesture of the performer or conductor) and can be performed unconsciously, but at the same time it can retain its validity due to the subjective intention of the reader. A single gesture, as a sign, has the following value: (1) **Qualitative** in the sense of Peirce's Firstness, (2) **Dynamic/directional/intentional** in the sense of Peirce's Secondness, (3) **Symbolic** in the sense of Perice's Thirdness. [190] This classification corresponds to the triads of layers of gesture distinguished in the later part of the dissertation in Rolf Inge Godøy, Theodor Wiesengrund Adorno, Mieczysław Tomaszewski, Michael Chion, Pierre Schaeffer, etc.

Hatten's observations that (1) gestures refer not only to physical movement, but also to non-musical movement, i.e. thought, rhetoric and verbal communication, and at the same time his (2) definition of gesture as a significant energetic shaping through time (which in my understanding defines gesture as a form of vessel in which its original context, intentions, and meaning are contained) – became the basis for my own understanding of gesture and the way it is expressed in *visibilium et invisibilium*.

Such vessels are gestures-references, the so-called quotations, e.g. a sample of Olga Tokarczuk's voice pronouncing the word "jestem" [e.g. II, mm. 185, 192, 195, 256], but also references to the great works of the past (*Credo III* [I, IV] and the third movement of Bach's *Violin Sonata* [I, III, m. 287], etc.). The aforementioned word "jestem" is a summary of a larger fragment of the Nobel Prize speech, it also contains Tokarczuk's self-expression: it expresses a range of emotions and personal affects, it is a statement with the overtones of almost a manifesto, it symbolically expresses her intentions and purpose, and it betrays in the manner of utterance a gesture that she otherwise avoided in her speech and which she clearly tried to control. All of this is contained, I think, in one sample, abstracted as a gesture. The use of samples of the friction of matches is of a similar nature: without hearing the effect, one can somehow hear the intention and direction of the motion, sensing as a promise what a specific, qualitative effect is aimed at, and what may or may not happen.

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[188] R. S. Hatten, *op. cit.*, p. 95.
[189] R. S. Hatten, *op. cit.*, p. 125.
[190] *Ibid.*

Thanks to Hatten's understanding, it is possible to use Mieke Bal's preposterous theory, i.e. mutual commentary on cultural artefacts. That is why I understand the above quotations not as a tribute or symbolic gestures as such, but as a relation, the creation of a new context, the interpretation of the works to which I refer. Both they say more about my artistic work and, I hope, my work says something more about them, putting them in a different light, so to speak. That is why these quotations are subject to transformations, changes, transformations, and complexions on various levels, they are embedded in the dramaturgy, sometimes in the foreground, and sometimes they are relegated to the background, the second, or even the third plane. It is not a question of quotation as a manifest act, but rather of an organic opening of setting (bacdrop, universe, „świat przedstawiony") in all its complexity. A temporary quotation from Bach [I, mm 59-89], born in a painstaking process of glitches and "snaps", experienced not directly (as a melody whose faint "shadow" is suggested by the cycles of inhalations and exhalations in wind instruments [I, mm. 74-89]), but in the secondary perspective (chords in the orchestra) and in the background perspective (processing, multiple stretching in time in the audio-playback), foreshadows, on the one hand, its foreground appearance in the third movement, But it also suggests my interpretation of it as a gesture through semiosis derived from the gesture of friction of matches. It is not a literal, exact quotation, but rather a form of reference, paraphrase, distortion, albeit with the preservation of idiomatics and the original energy that the gesture stores.

At the same time, I try to avoid constructing specific meaningful interpretations, which are not the forms of the libretto, or at least I do not intend to do so when constructing the musical work, but at the same time I try to anticipate the effects of the selected material and its compositions. In my opinion, this action, which I avoid, is deeply contrary to the role of music as an ephemeral, idiosyncratic creation that does not communicate directly. I prefer the role of a coordinator of the intertwining of contexts, idiosyncratic experiences, rather than an autocrat imposing a uniform interpretation. Respecting and appreciating the diverse background of the recipient, I try to encourage them to build their own interpretations and ideas. So I try to gather myself, build in many ways, in the hope that the viewer will want to observe these treatments and synthesize them into some individual, own form of conclusion. I do not believe, as Szwajgier put it, in a "(perfect?) listener", if only because some of the quotations used do not come from a universal, universally available "canon", and thus are potentially imperceptible even to a specialist. Instead, I believe in the perfect, transforming power of individual experience, which is not offered unilaterally, but rather encouraged to discover or sense it on one's own.

2.5. Musical Gesture – perspective of Rolf Inge Godøy and Marc Leman

One of the goals set by Godøy and Leman, and other authors who co-wrote with them, was to build a coherent theoretical and methodological framework for studying the similarity of sound and movement in musical experiences and the movement of the body itself in musical contexts[191]. Their theory, despite its clear orientation towards performativity (including sonification in the *HCI*)[192], is very broad, which allows it to be used flexibly in various contexts: from abstract structural gestures, through purely performance gestures – musicians, conductors, dance gestures, or those resulting from the use of motion sensors and kinects – to automated body reflexes. Therefore, I leave the definition of the gesture to the end of the chapter, presenting and organizing the sources that shaped Godøy's and Leman's convictions.

As in other cases, the discussed approach synthesizes many methodologically different concepts from different fields – cognitive science, language sciences, etc. – although the direction of this synthesis, i.e. the performative approach, is clearly perceptible. Godøy and Leman see the metaphor of the description of sound phenomena expressed in spatial-sensory categories[193] and appreciate its practical usefulness, while criticizing the low codification, i.e. the lack of conceptual precision. Hence, they wonder whether these phenomena are rightly considered natural and how the modality between the sound system and the motor system is broken, as well as whether determining the similarity[194] between them requires complete iconicity, or whether the processes of analogy, e.g. in the form of Schaeffer's morphodynamics, are sufficient.

This is where the first of Godøy's foundations emerges: **Pierre Schaefer's typology of sound objects**, expressed in *Traité des Objets Musicaux* (1966), [195]in which the founder of the concrete music proposes, as Schreiber notes, a synthetic metaphor of perceptual and morphological categories[196]. This concept resulted from a critical approach to the Western musical system, which enculturated the elements of the work separately[197]. Hence,

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[191] R. I. Godøy, M. Song, K. Nymoen, M. R. Haugen, A. R. Jensenius, *Exploring Sound-Motion Similarity in Musical Experience*, [in:] *Journal of New Music Research*, 2016.
[192] The concepts of Rolf Inge Godøy and Marc Leman have evolved smoothly over the last twenty years, which can be observed by comparing their texts in the "central" interpretation of the concept, included in the monograph from 2010, with a decidedly performative orientation (although not escaping from other understandings of gesture). In this text, I devote more attention to their smaller, scattered texts and the main, definitional chapter of the monograph, while the remaining chapters are focused rather on specific performative and *HCI* problems solved practically.
[193] R. I. Godøy (et al.), *Exploring…*, *op. cit.*, p. 2.
[194] A state of flexibility, of approximation, without being identical at the same time. *Cf. Ibid.*
[195] The resulting Polish nomenclature was established by Włodzimierz Kotoński. *Cf.* W. Kotoński, *Muzyka elektroniczna*, Kraków, 2002, p. 44.
[196] M. Schreiber, *Muzyka i metafora...*, *op. cit.*, pp. 188 and next.
[197] It should be noted that the described situation still persists.

Schaeffer's theory is based on universal, cross-cultural principles of human perception: firstly, the separation of sound from the associations it provokes, thanks to which the process of reduced listening occurs[198], and secondly, the typologization of the description of the characteristics of sound structure as an intentional, holistic phenomenon that occurs through perceptual morphodynamic properties (mass, dynamics, motion, harmonic timbre, melodic profile, mass profile and granularity[199]). Focusing on shape allows one to assess similarities in motion and trajectory.

A sound object is hierarchical by design. Being a component of a higher-order structure, and because of the formation of abstract relations between it and this structure, it establishes **a musical object** (Godøy speaks here of a "composed sound object" or a "composite" object[200]). According to Chion, the abstractness of the sound object does not preclude it from being treated in the category of a "sound myth": a process of reification and visualization of sound phenomena, leading to perceptual perception as a multidimensional, homogeneous phenomenon[201].

Godøy interprets the sound object as a holistic intentional unit. Schaeffer's idea, close to phenomenological thinking, is described as follows:

(1) "A sound object is not a [material] source of sound;

(2) A sound object is not a physical signal;

(3) The sound object is not a fragment of the recording;

(4) A sound object is not a symbol notated in the score;

(5) A sound object is not a state of soul or mind."[202] [203]

Paraphrasing the author (who indicates the types of gestures), it is also possible to point out three elements that shape the sound object: (1) **Excitation and modification of sound** (including the transfer of energy from the performer to the instrument); (2) **Tracking (observing) sound**: e.g. the contour of the resonant envelope, spectral shape (timbre,

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[198] Reduced listening can be defined as listening to the internal richness of features of a sound object without external references, focusing on typological and morphological features. M. Chion, *Audio-wizja. Dźwięk w obrazie*, transl. K. Szydłowski, Warszawa, Kraków 2012, p. 28 and next.
[199] M. Lech, *Pierre'a Schaeffera próba stworzenia metody analizy muzyki elektroakustycznej*, [in:] *Kwartalnik Młodych Muzykologów UJ*, no 33 (2/2017), p. 102 and next.
[200] R. I. Godøy, *Images of Sonic Objects*, [in:] *Organised Sound*, 15 (1), Cambridge, 2010, p. 60.
[201] M. Schreiber, *Muzyka i metafora…*, *op. cit.*, p. 189.
[202] M. Chion, *Guide des objets sonores*, Paryż, 1983, p. 34; *Cf.* E. Schreiber, *Muzyka i metafora…, op. cit.*, pp. 188 and next, E. Schreiber, *Opis przedmiotów dźwiękowych Pierre'a Schaefera. od metafory do kompozycji*, [in:] *Kultura współczesna*, 1 (72), Warszawa, 2012, p. 32.
[203] These comments are very close to Ingarden's observations about the nature of musical work and experience.

dynamics), etc.; (3) **Accompanying actions**: other gestures synchronized with certain characteristics of the music; amodal, affective, or emotive[204].

Sound objects clearly have components of gesture (homogeneity, hierarchy, production of a mental image, etc.), while methods of studying texture and musical timbre introduce gestural categories. In this sense, it is Godøy's methodological basis.

On the occasion of recalling the father of musique concrète, it is impossible not to mention the assumptions of both *the audio playback* part in *visibiium et invisibilium and* the electronic music produced by amateurs ensemble. Electronics is maintained in the French type, that is, I am looking for a common ground in music between instruments and electroacoustic sounds, between which a relation of complementation, homeostasis, is created, so as to create a relatively homogeneous whole.
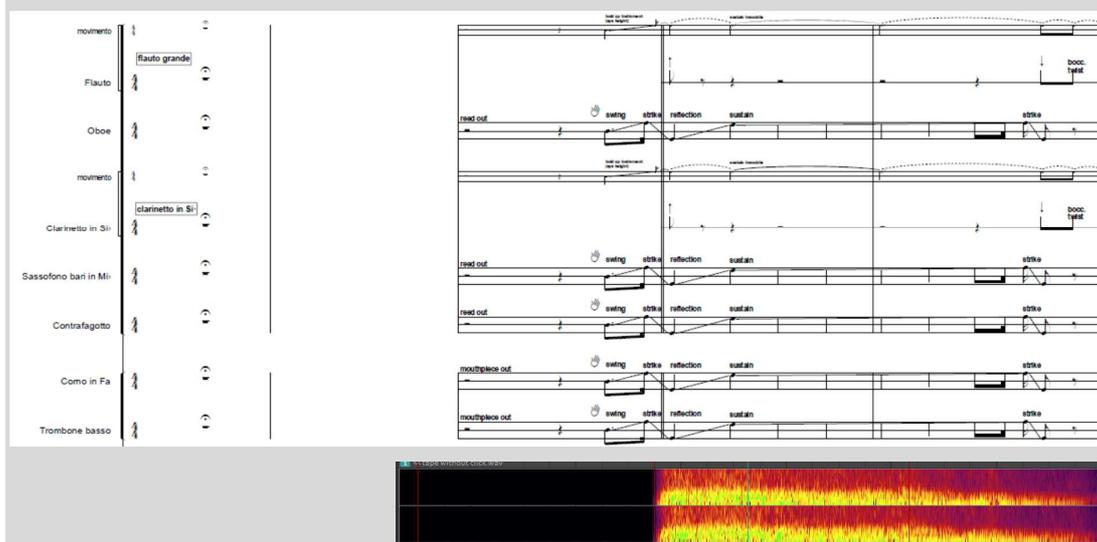
Figure. 24. The "response" of the gesture-process in *audio playback* (represented on the spectrogram) into a "point" gesture-aggregate in the orchestra (represented in a fragment of the score). *visibilium et invisibilium*, mm.147-151.

Very often in the electronic part I use the consistency of the process (parts I, IV, V: especially the unification of the gesture in synchronous points, its support in the moments of investigation, and after reaching it, polygenization, dispersion), although maintaining the distinctiveness of the material "poetics" of the layers. And so, the audio-playback is based on sample processing, while the part of amateurs ensemble is based on playing objectophones and small instruments, live processing , generating sinusoidal tones. At other times, the relation is shaped as a homogenizing counterpoint, i.e., a counterpoint of different vectors, merging into a common gesture at the synchronization point. In this case, either the audio-playback

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[204] R. I. Godøy, *Gestural Sonorous Objects*, [in:] *Organised Sound*, 11(2), Cambridge, 2006, pp. 153 and next.

as a figure initiates the processes and the orchestra is the background, or vice versa, which is particularly evident in the second movements (musical example) and III.

The *audio playback* sometimes plays the role of a link between the stages (e.g. when the homogenization of sounds in the orchestral and amateur parts is so advanced that the audio-playback "dies out" unnoticed, while the orchestra continues to play [II, mm. 232-246]). The "modulation" function can also be mentioned (in the harmonic sense, by preserving the common notes of the spectrum with *D* as the tonal center of the orchestral part, through *the B* as a convenient, mediant combination, up to *the dis* as the 5th overtone of the *B spectre*, which is the initial sound of the monody from *Credo III*, on which the fourth movement is based [III, mm. 304-IV, mm. 334]).

As I have already mentioned, the part of amateurs ensemble conceived not as a form of introducing strict topophonic trajectories of gestures[205], but as a means of delineating or expanding the sound spaces in which the listener is immersed as islands of sound separated by backlighting. It is therefore a form of a multidimensional, audiovisual image. Although it is essentially based on the relations of conformity and complementarity with the audio-playback and orchestra part (the parallel quality of the sound material), the amateurs ensemble operates primarily with spatial differences, ensures that the listener is somehow "absorbed" by the sound (as well as, for example, immersion in the beats [IV, m. 322-337]) and offers the possibility for the audience to observe the performance activities (playing on objectophones, processing) up close. The above dependence on the orchestral and audio-playback parts is broken in the fourth movement [ibid.], when the amateur ensemble plays alone for a few minutes with only a slight, very delicate accompaniment of the audio-playback and the orchestra later joining [IV, m. 326] in building up the climax.

Schaeffer's concept is based on the perception of phenomena that can be objectified, although they still remain subjective in reception. This is due to the fact that it is difficult to investigate what is going on in the mind, because it is impossible to place an objective observer inside it, registering a stream of images: scenes, gestures, sounds. This can be combined with PET scans, CT scans, etc., but these are ad hoc solutions[206]. The second basis of Godøy's theory is cognitive science, in which he looks for a basis for the issue of perception. For Godøy, empirical observations are important, but also psychic observations,

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[205] The original intention was for the ensemble to move in space (around the audience, orchestra, dancers), and the audio-playback part was to be performed in an omnidirectional, eight-channel system. The conclusion that it would be another complication, an additional burden on the perception of an already complex work, and perhaps even a form of a "gadget", made me give up this idea..

[206] R. I. Godøy, *Gestural Imagery in the Service of Musical Imagery*, [in:] A. Camurri, G. Volpe (ed.), *Gesture Workshop 2003*, Berlin, Heidelberg, 2004, p. 56.

such as: the ephemerality of sound phenomena, the multimodality of experience, sensory streams (sonic, visual, somatic and kinetic) that create a permanent trace in the mind.

A rather controversial theory **of musical motor imagery**[207] (in other texts by Godøy and Leman called **embodied cognition**[208] or **embodied imagery**) states that **perception is an active simulation of movement**[209] **associated with any sensory impressions mediated by the body, which is processed in the mind** and does not directly require an audible sound source[210]. Imagery is not a form of iconization or metaphorization, but a direct, subjective, first-person reproduction of the realization of experience[211]. According to the authors, it is a form of script, instructions with variable resolution. A similar imaginative process is likely to take place in language as well: the understanding of a linguistic utterance occurs not only through the grammatical structure generated, but also through the gestures that accompany the utterance[212].

An idea has many features in common with actual experience[213], Godøy and Leman define them as functionally equivalent (just as, on the basis of Peirce's semiotics, an object is equivalent to its manifestations, including effects). These are feedback-coupled systems, "illuminating" each other[214]. At the same time, it is a social and cultural phenomenon that explains many musical phenomena, and thus, as the authors point out, recalling and reliving sound experiences in the mind, the possibility of inventing new sounds, not yet experienced

[207] R. I. Godøy, *Gestural Imagery…*, *op. cit.*, p. 57; R. I. Godøy, *Images of sonic…*, pp. 54, 57.

[208] E.g. M. Leman, *Embodied Music Cognition and Mediation Technology*, CogNet, 2007; M. Leman, *Musical Gestures and Embodied Cognition*, [in:] *Actes des Journees d'informatique Musicale (JIM2012)*, Mons, 2012; R. I. Godøy, *Images of Sonic...*, *op. cit.*

[209] *Cf.* R. I. Godøy (et al.), *Exploring…*, *op. cit.*, p. 4. According to the authors, motion simulation will involve both a quick, global "reproduction" of the sequence of actions and a slow local approximation of details, depending on the "resolution" of the imaging (unclear, approximate, sketchy). These "resolutions" are described as time scales (micro, meso and macro), extending between the local and global perception of phenomena. At the same time, the process of perceptual experience itself in reality and embodied cognition also takes place simultaneously on different time scales. The variety of scales is justified by the different nature and ways of perceiving local elements: style, rhythm, texture, timbre, modal/tonal features, expressiveness, body movement.

[210] Imaging as mental processing is not abstract processing of sensory data (symbol manipulation). *Cf.* R. I. Godøy (et al.), *Exploring…*, *op. cit.*, p. 4; R. I. Godøy, *Gestural-Sonorous Objects…*, *op. cit.*, p. 160.

[211] *Cf.* R. I. Godøy, *Gestural Imagery…*, *op. cit.*, p. 56. In this sense, it comes close to Chion's concept of the audiovisual contract.

[212] According to observations made in the field of language science, learning comprehension, grammar, language is in fact a process of learning to imagine the gestures of the language that accompany utterances, not only enriching the language rhetorically, but probably being the evolutionary basis of spoken language. *Vide:* A. Kendon, *Gesture. Visible Action as Utterance*, Cambridge, 2015. Nb. Kendon's reflection, as an outstanding specialist in gestures, is cited with appreciation in the texts of Mazzola, Godøy and Hatten.

[213] Godøy points out: (1) that some areas of the human brain responsible for motor experiences are activated together with areas responsible for musical imagery; and (2) the McGurk effect, a perceptual illusion: when seeing a gesture producing a sound, one may believe that he or she heard something other than what the acoustic signal actually contained. *Cf.* R. I. Godøy, *Gestural Imaginery…*, *op. cit.*, pp. 56-57. Some composers base their concepts of gestures on this illusion, e.g. Adam Porębski distinguishing gestures of play and stillness, or Wojciech Błażejczyk in his gestophone, in which visual (performative) types of gestures are secondarily added through performative movement, reproduction and granular processing of samples of extended performance techniques. , necessary to extract these sounds from actual, physically existing instruments.

[214] R. I. Godøy, *Images of Sonic…*, *op. cit.*, p. 55.

by the "inner ear", and often ordering them with grammars of motor experiences. This is clearly visible in traditional (also folk) vocal music, where the experiences of inhalation-exhalation or the air ceiling in the lungs regulate the form and length of melodic phrases. The authors emphasise that this phenomenon also makes it possible to interpret musical phenomena, such as reading the score "gesturally", i.e. not focusing on the classes of individual elements (e.g. harmony), but enabling the depiction of larger synthetic wholes (e.g. dramaturgy, sound actions, gestures) as a script, a script, and in different "resolutions". The same is true of the reverse process, i.e. instrumentation[215].

The hierarchical nature of the experience is related to its levels and "resolutions" – it allows one to capture and control the entire action, but also the successive layers of detailed subroutines of "coarticulation" – where separate local actions merge into global actions[216]. Embodied cognition, understood by Godøy as a **script** (commands and predicted outcomes), is ontologically oriented towards gesture or action. **Embodied interaction**, on the other hand, is a prediction based on the psychoacoustics of perception (protency, retention), but also on taking movement (motion) as sound.

Godøy and Leman argue that the association of body movement with music is universal and independent of the level of musical training, since most people have the experience in such associations[217]. To enable motor imaging, a **motor imaging engine** is necessary , which is what actually triggers and sustains sound images in the mind[218]. **Motor equivalence,** on the other hand, is the use of flexible, alternative performance of actions within imaging.

According to Godøy, the presence of both correlates – the sound object and embodied cognition – makes it possible to distinguish **the category of gestures as an intermediary between music and other systems of thought (signs).**[219] From this follows a form of reduction and separation of the multimodally experienced sound phenomenon (also expressed graphically) from the sensory experiences it provokes, from the images of action it evokes, from the images of the effects of actions it implies, and from the image of the movement "choreography" that produces sound. Nevertheless, these elements remain closely coupled and force the examination of the gesture in the light of all these categories[220]. Due to this fact, Godøy expresses the hypothesis that the meaning, the content of music has

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[215] R. I. Godøy, *Gestural Imagery…, op. cit.*, p. 58.
[216] R. I. Godøy, *Images of Sonic…, op. cit.*, pp. 56-57.
[217] They justify their position with experiments similar to the Truslit experiment discussed earlier. *Cf.* R. I. Godøy, *Images of Sonic…, op. cit.*, p. 56.
[218] R. I. Godøy, *Gestural Imagery…, op. cit.*, p. 55.
[219] R. I. Godøy, *Sonorous Objects…, op. cit.*, p. 153.
[220] M. Leman, *Musical Gestures and Embodied Cognition, op. cit.*, p. 7.

a "rotating" character, it is the result of ubiquitous images of gestures (scripts, hierarchical synthetic structures), the generation and transformation of gestures through sound and their decoding during the perceptual process (listening and cognition of the "grammar" of the language of gestures). Mutual interaction is possible mainly due to the commonality of their dimensions, i.e. spatio-temporality[221].

The author notices that the experience of movement (effort-rest) schematically limits the generation and transformation of musical qualities (e.g. melodic grouping in the shape of tension-relaxation), [222]i.e. it leaves a permanent mark on it. A musical gesture is supposed to be a category belonging to a musical sound, just as a gesture is supposed to be a category belonging to a sentence expressed in language.

Gesture sensations

Gesture units by constraints   Continuous sound tracing

Multimodal gesture images   Continuous sound
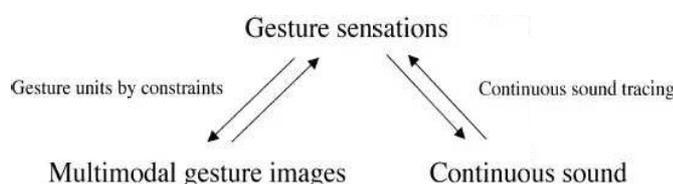
Figure. 25. Gesture coding and decoding scheme according to Godøy[223].

Godøy's concept somewhat illuminates Peirce's semiosis in terms of embedding gestures as a higher-order composite, where secondarily **S** replaces the originally denoted object **O**, and **I – S**. This can be illustrated as follows: **O** is a multimodal image of a musical gesture (a performance action and the resulting sound of a specific quality), **S** is the sensory sensation produced by the gesture, and **I** is a sounding, continous sound. At the same time, mutual bonds are created here: the process of marking – the perception of the elements of the gesture according to the constraints (between **O** and **S**) and the process of interpretation, the continuous tracking of the sound (between **S** and **I**).

Therefore, according to Godøy, the musical gesture is **a "mental", universal pattern of action that produces sound, that is encoded in music, or that arises in response to music**[224].[225] The essence of a movement is its continuity: several successive actions can be seen as one coherent gesture, a "script" of action. A set of different actions can be seen as

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[221] *Ibid. Cf.* M. Leman, *Musical Gestures and Embodied Cognition, op. cit.*, p. 6.
[222] R. I. Godøy, *Gestural Imaginery…, op. cit.*, p. 59.
[223] R. I. Godøy, *Sonorous Objects…, op. cit.*, p. 150, R. I. Godøy, M. Leman (red.), *Musical Gestures. Sound, Movement, and Meaning*, Nowy York, Oxon, 2010, p. 13.
[224] R. I. Godøy, M. Leman (red.), *Musical Gestures…, op. cit.*, pp. 16-19, 23-24.
[225] It remains to be asked whether it can be an unacknowledged form of musical universalism. *Cf.* P. Podlipniak, *Uniwersalia muzyczne*, Poznań, 2007.

coarticulation. The double intentionality of the empirical nature of the gesture is also revealed here: a change in the physical position of an object or body can be described[226]:

(1) Objectively (**Motion**), kinetically, temporarily, spatially (sound as an acoustic wave shape, at a specific time, timbre, topological space, etc.);

(2) Subjectively (**Action**) (intentions, goals, gesture expression);

(3) In the context **of the Meaning** it evokes (understood as the mental activation of the mind, depending on the context of the occurrence and the recipient's personal experiences in communication between domains).[227]

According to the authors, these phenomena taken together are called not motion, but gesture, because they blur the difference between Cartesian sensory experiences (the image of movement) and metaphysical experiences (mental experiences).[228] The three elements of gesture distinguished by Godøy meet the reflection of other authors of gesture theory by distinguishing triads of elements: subjective, objective and communicative, or phenomenological, biomechanical and functional[229].

2.6. Musical Gesture – perspective of Denis Smalley

A specific methodological response for Schaefer and later theories of both Hatten and Godøy may be the concept of spectromorphology of Denis Smalley, which was presented as early as in the 1980s. It should be emphasized that Hatten and Godøy did not seem to see this possibility, and it could help to reconcile some of the threads of their radically immanent, i.e. founded on musical classics and theory *Virtual Agency* and transcendent, i.e. theory founded on performance actions and embodied cognition.

By eclectically defining **spectromorphologies** as gestures and textures, Smalley obviously refers to Schaeffer with his spectrodynamics on the one hand, and at the same time to various semiotic systems and scientific disciplines (visual, linguistic, biological, medical, geological). He explains such choices by the multimodality of the musical experience itself and its description, which oscillates between metaphors of experiences and senses, and the invention of new concepts to define sound phenomena[230]. Spectromorphology in its name refers to the morphological character of sound (shape,

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[226] R. I. Godøy, M. Leman (ed.), *Musical Gestures…*, *op. cit.*, pp. 14; 17-19.
[227] Motor imagery therefore corresponds to a sign.
[228] *Ibid*.
[229] *Ibid*.
[230] D. Smalley, *Spectromorphology: Explaining…*, *op. cit.*, p. 107.

structure, energy), spectral (pitch and timbre), but also psychoacoustic (perceptual), based on criteria potentially understandable to all listeners, i.e. cognitive experiences[231].

Spectromorphology cannot be narrowed down to technique or compositional method. The composer's perception of the musical work, i.e. mainly as Grisey's "skeleton" and "flesh",[232] is far from the perception of the listener, who focuses mainly on the "skin" of the musical work. Spectromorphology cannot be narrowed down to a tool of analysis, a description of a piece of music, because as it is based on auditory perception, it reflects too large a field of subjectivity. This happens on the conceptual level, as spectromorphology is not a systemic solution, but rather a proposal for the direction of reflection and is based on **intuitive** categories of comparing physical movement to sound motion. The second area of the clash between objectivity and subjectivity of spectromorphology is the technological aspect: the spectrogram, i.e. the main research tool, is not a reflection of what the listener hears, and thus remains too objective[233].

The main subject of spectromorphology are **the internal features of sound events and their relations, but also external, cognitive relations**. The aforementioned intrinsic feature of sound events is the energetic formation, resulting from the perceived movements (both real and imagined) and processes, and the perception of relations between the source and cause of sound[234]. According to Smalley, internal and external sound events are interactive, feedback-driven. However, experiments of symbolic or cultural provenance, as well as technological ones, are excluded here. Smalley himself states that thinking in technical "procedures" is redundant, and thus does not carry perceptual information[235].

Although spectromorphology is derived from and conceived for electroacoustic music, Smalley notes that it can be applied to other types of music as well, "which are more concerned with spectral properties[236] than actual notes, more concerned with varieties of motion and flexible fluctuations in time than in metrical time, more concerned to account for sounds whose sources and causes are relatively mysterious or ambiguous rather than blatantly obvious[237]. Founding spectromorphology on Schaeffer's theories, including those concerning musique concrète, automatically provokes its application within the framework of

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[231] D. Smalley, *Spectro-Morphology and Stucturing Processes*, [in:] *Language of Electroacoustic Music*, Cambridge, 2007, p. 63

[232] I am drawing a parallel here with Grisey's concept of time. I believe that this comparison can also be applied to other synthetic systems and parameter relations in the work. *Cf.* G. Grisey, *Tempus ex Machina: a Composer's Reflections on Musical Time*, [in:] *Contemporary Music Review*, vol. 2, 1987, p. 239 and next.

[233] D. Smalley, *Spectromorphology: Explaining…*, *op. cit.*, pp. 107-111.

[234] *Ibid.*, p. 110.

[235] *Ibid.*, pp. 108-109.

[236] Also interested in building a hyper-instrument like instrumental synthesis.

[237] *Ibid.*, p. 109.

Lahenman' *s musique concrète instrumentale*, and further to the music of spectralists (Gérard Grisey, Tristian Murail, Jonathan Harvey) and Iannis Xennakis. For the reasons mentioned above, Smalley perceives a lesser cognitive value of spectromorphology for traditional, jazz and popular music, but at the same time he cares about the principle that perception transcends national and style idioms, and potentially even an periods, or even belongings to a particular cultural circle[238].

To understand Smalley's approach, it is necessary to familiarize oneself with the nomenclature of spectromorphology:

(1) **Source bonding:** the perceptual process of identifying the internal and external relations of sound, the impersonated source, both real and imagined[239], emitter and cause. It is subjective[240] and mental, it establishes a hierarchy (grouping) due to its related origins (sources and causes)[241].

> Example:
>
> **Source:** the sound of the sulphurous tip of a match being grated against a stick (sandpaper). **Cause:** deliberate friction by man to start a flame, to create light. Contrary to Smalley's intuition, which avoids all forms of literal images, meanings, etc., in my deepest conviction it is the intention of this friction that is important for later *surogacy* ("podstawienie", as I will call this process in polish): whether the activity is performed calmly, precisely, or obsessively, compulsively, whether it aims to achieve an effect, or whether it is a continuous attempt without achieving a goal.

Source bonding as an individualized process is envisioned as hypothetical and beyond **the strict control of the** composer.

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[238] Personally, I think that this method can also be used in earlier or aesthetically different works. As an example, I can mention William Walton's *Coronation Te Deum*, which is based on clearly "terrace" instrumentation (there is no question of any "instrumental synthesis") and clear homophony, attachment to the gravitas of traditional 3/4 rhythm, as well as to " gravity" of the tonal system, it is, however, a fascinating study of movement fluctuations between the layers of the work, which trigger a number of interesting reflexes of the nature of embodied cognitions, e.g. the bow reflex, etc. I think that in every type of musical work it is possible to indicate or reconstruct Smalley's types movement even at the lowest level of assembly, i.e. in individual, small elements, not necessarily comprehensively. To make this possible, space only needs to be properly interpreted as a unifying platform. Smalley seems to be very attached to the understanding of physical space, and his musical spatial metaphors result from the iconic parallel of auditory space to topological space.

[239] Protention, the prediction of connections between the heard sound and its confirmation by facts (seeing, touching, experiencing the sound source) is the basis for numerous manipulations, often used, among others. in film or computer games as an artistic means. An example is the famous Pythagorean acousmatic curtain, or schizophony, i.e. the separating of the emitter and electroacoustic reproduction, described by Raymond Murray-Schafer as a phenomenon typical of everyday life in the city. *Cf.* R. Murray-Schafer, *The New Soundscape. a Handbook for the Modern Music Teacher*, Toronto, 1969, pp. 43-47.

[240] Therefore, it does not belong to strict analysis, but rather to what Godøy describes as "Action".

[241] D. Smalley, *Spectromorphology: Explaining…, op. cit.*, p. 110.

(2) **Gesture**: a basic, synthetic unit (connects the internal with the external, the source with the cause), the sound-forming trajectory (carrier) of the motion and physical energy of the action. The gesture is sensual, visual, auditory[242] and proprioceptive, i.e. related to the tension and relaxation of the muscles, the cycle of breathing, which leave a permanent mark on the gesture and allow deductions to be made about its essence and origin[243]. The gesture is perceived as a consequence, a dynamic figure with a narrative character, a linear, directed development of the course. The lowest-level in the hierarchy is a single sound (e.g. a note), and their chain forms the outline of higher-order gestures[244]. A gesture does not have a fixed hierarchical organization structure[245];

(3) **Gestural surrogacy**: separation, detachment of the source and cause of sound from psychophysical experiences[246]. It is reminiscent of Peirce's semiosis, which is why I present them as follows:

First-order surrogacy:

O: the primordial phenomenon, the gesture with its source and cause – **S:** a sounding gesture, preserving the source and cause – **I: the** composer translating through the instrumentalization of the gesture into a sounding gesture, recognizing and exploring its potential while working on the music.

Second-order surrogacy:

O: sounding gesture – **S:** sound structure in a piece of music – **I: the** listener making identification on the basis of cognitive experience, having subjective certainty about the reality of the source or cause of the gesture.

Third-order surrogacy:

O: sounding gesture – **S:** sound structure in a piece of music – **I:** the listener acting on the basis of the process of inference or imagining under conditions of uncertainty to the reality of the source or cause of the gesture.

Weak gestures are only slightly rooted in the motion that causes them, which is a high-order, remote surrogacy.

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[242] *Ibid.*, p. 111.
[243] This seems to be a general tendency within spectralism that developed at the turn of the 1960s and 1970s, and which can be noticed, for example, in the legend of the score *Periodes* i *Patriels* by Gérard Grisey.
[244] *Ibid.*, pp. 112-113.
[245] *Ibid.*
[246] *Ibid.*; D. Smalley, *Spectro-morphology and…, op. cit.*, p. 83.

(4) **Texture**: the opposite of a gesture, a succession perceived as a "background", [247]a long-term process with a dispersed, multi-threaded course, static, impossible to grasp hierarchically[248].

2.7. Gesture in relation to the philosophy of Maurice Merleau-Ponty

The 20th century resulted in extensive phenomenological reflection, especially by Edmund Husserl and Martin Heidegger, and in Polish aesthetics – by Roman Ingarden. In their texts, there is a re-evaluation of the hitherto understanding of the dichotomy of matter, body and form, mind, and consequently a synthesis of the hitherto separated paradigms of empiricism and intellectualism[249]. Gilles Deleuze, who worked together with Felix Guatarri, left a clear mark on French phenomenological reflection. These two laid the foundations for a philosophy centered on the problem of meaning and motion, both human movements and the movement of thought (transcendent empiricism) or rhizome (*Rhizome*). This thought left a strong mark on composers of the 20th and 21st centuries, especially Grisey.

A particular kind of phenomenological thinker is Maurice Merleau-Ponty. His ambiguous philosophy *Explicitly* introduces so linguistic (m.in.**gestural theory of linguistic expression**), visual and performative gestures, not specifically musical ones. Nevertheless, the conceptual grid expressed by the philosopher can be applied to them, due to the reference to sensual and aesthetic experiences, specific expression and equating, following Herder's example, of thought with the way it is expressed both in language and in non-linguistic arts. They break the Cartesian dualism and at the same time are communication-oriented, **the meeting of two equal subjects, the reciprocity of their reactions, the creation of a common experience, a world**.

Merleau-Ponty's famous statement that "(...) habit has its abode neither in thought nor in the objective body, but in the body as mediator of a world."[250] The gestures observed and understood contain a certain direction, *mode*, purposefulness, they refer to distinguishable and knowable fragments of the world, with which they suggest a similarity[251]. **With regard to gesture (whether linguistic, aesthetic experience, or dance as movement), meaning does not pre-exist, but is constantly actualized[252].** At the same time, the theory of reversibility (*réversibilité*) is a reflection of the inner truth that has been brought to an end,

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[247] *Ibid.*, pp. 111-112.
[248] D. Smalley, *Spectro-Morphology and…, op. cit.*, p. 82.
[249] M. J. M. Tamayao, *Merleau-Ponty's Philosophy Of Language* [not yet published].
[250] M. Merleu-Ponty, *Phenomenology of Perception*, transl. C. Smith, Londyn, Nowy Jork, 2005, p. 167.
[251] M. Merleau-Ponty, *op. cit.*, p. 216.
[252] T. Fazan, *Fenomenologia i performatyka gestu w tańcu współczesnym*, [in:] *Przestrzenie Teorii*, 29, Poznań, 2018, p. 218. *Cf.* M. Gołębiewska, *Sensotwórcza rola ciała w samopoznaniu według Maurice'a Merleau-Ponty'ego*, [in:] *Teksty Drugie*, 2004, p. 238.

which the author emphasizes, and through which the relation between the knower and the known is described, as well as the dependence of cognition on entanglement with the known, i.e. with its meanings and objects. The individual subjectivity of cognition (*gνῶσις [gnōsis]*) is equated in objectivity with knowledge (*ἐπιστήμη [epistēmē]*) and experience, universal conviction (*δόξα [doxa]*). Thus, the body and its reactions become a tool for examining the corporeality of the world as its measure and model[253]. The mediation between the bodily beings objectively described and subjectively perceived and the meanings and senses takes place through the intention, i.e. the possibility of articulation that externalizes these meanings[254].

The gestural theory of linguistic expression is marked when the philosopher speaks, or, as Tamayao notes, emphatically manifests that "La parole [the spoken word] is a genuine gesture, and it contains its meaning in the same way as the gesture contains its [meaning]."[255] It probably stems from Merleau-Ponty's belief that man is able to stop his fleeting thoughts through speech. It is, therefore, a doubly sensual activity, because it is bodily, physical, and at the same time metaphorically analogous to other bodily behaviors. The individual **understanding of the speaker's thoughts occurs "in" and "through" his speech, but also equally through gestures**, although the gesture itself is directed "towards".[256] Tamayao, commenting on Merleau-Ponty, notes that silence can also be a gesture in itself, it is "alive". As speech before utterance, the void waiting to be filled with sound[257], the antecedent (prehistory) of speech, creates a gravitating absence in the conversation, giving it a definite character and direction. It further points out that:

> "(...) [The relation between word and meaning lies] in the "primary processes of signification" which is seen in the spontaneous eloquence of the living body as the non-conventional ground of the development of conventional meanings. The "action which breaks the silence" is, originally, the mute but spontaneously expressive comportment of the living body to signify. Out of this capacity grows a conventionalized system which is a language. However, the significance of mute gestures is neither arbitrary nor conventional."[258]

Teresa Fazan, on the other hand, emphasizes:

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[253] *Ibid.*
[254] *Ibid.*, p. 246.
[255] M. Merleau-Ponty, *op. cit.*, p. 213.
[256] M. Szyszkowska, *Gest ekspresyjny jako element estetycznej interpretacji dzieła muzycznego*, [in:] *Sztuka i Filozofia* 2223, 2003, pp. 262-280. *Cf.* M. J. M. Tamayao, *op. cit.*; G. Mazzola, *op. cit.*, pp. 860 and next.
[257] M. Merleau-Ponty, *op. cit.*, p. 382.
[258] M. J. M. Tamayao, *op. cit.*

"As Merleau-Ponty observes, 'the whole man expresses himself in a single gesture.' This is not a banal sentence, but a far-reaching observation: the word gesture, in the basic sense having a bodily character, becomes a metaphorical approach to the sense-forming character of bodily expressiveness. It is a continuation of the phenomenologist's earlier theses: the meanings generated as part of the gesture are rooted in the whole existence of the subject. (...)In an expression that uses corporeality as the fundamental carrier of meanings, the overall dimension of the subject-body is also essential: when we look at it, we do not see an object, but a bodily whole, 'individual, affective, sexual expression'. (...)The body is the first instrument for giving and reading meanings, the silent language that exists before all speaking manifests itself in the expressions of the body, art and, as Merleau-Ponty writes, between the words of the philosopher. (...) In *The Phenomenology of Perception,* Merleau-Ponty writes that a work of art is a 'modulation of existence', (...)'[works of art] are individuals, that is, entities in which expression cannot be distinguished from its object [259], expression from what is expressed, whose meaning we reach only through direct contact and who radiate meaning without leaving their place in time and space' (...)Similarly, Merleau-Ponty writes about the nature of the artistic gesture, noting that in order for the body to express at all, it must necessarily become expression itself and, consequently, what is expressed.[260]

For these reasons, Merleau-Ponty's thought is very convenient for artists and art theorists, because it perceives experiences in their dynamics, which semiotics does not know. This philosophy is an ally of the internal paradigms, and thus an explanation of Hanslick's "sound forms in motion" without the need to define meaning and meanings. It is also a starting point for Mazzola's theory of gestures and, consequently, for all currents of *HCI* sonification, e.g. the musical use of kinects, because as part of the phenomenology of gesture in the French presemiotic school, important mathematical approaches were developed, followed by performative ones[261].

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[259] Małgorzata Pawłowska clarifies this statement in a completely different (intersemiotic translation) context, citing Langer's aesthetics of emotions: "Therefore, two basic concepts are interesting: expression and its ways of functioning in both works, and analogy, i.e. how expressive categories are translated from the first language into the language of the other work of art. [...] The expressive value of the musical course will be constituted on the basis of analogy, and its effect will be the 'expression of something', but also the 'expression' – that is, that which becomes an immanent feature of the other, expressive work." [translation after Pawłowska done by myself]. Pawłowska notes that when expression, analogy and general dramaturgy are compared, a *tertium comparationis* emerges. *Cf.* M. Pawłowska, *Maeterlinck/Astriab/Ślepcy. od dramatu literackiego do dzieła operowego*, Poznań, 2018, p. 189.
[260] T. Fazan, *op. cit.*, pp. 215–249. [translation done by myself]
[261] Charles Alunni is particularly important here, pointing out that understanding a gesture should be treated as an exchange and transmission of gestural information (both in communication and by giving meaning to each other by building a system of reading rules). The author concludes that gestures are "not the ornaments of established truths [of action]". *Cf.* G. Mazzola (ed.), *op. cit.*, p. 861. Gilles Châtelet is also important, as a mathematician and philosopher in one, as a clear model of attitude for Mazzola. He radicalized the pre-semiotic approach to gesture in his work *Figuring space*, where gestures are clearly not identical to their graphic representation, a diagram, but are "wild vibrations", and through these diagrams they can be overpowered and "disembodied". The author thus

2.8. Musical Gesture – perspective of Theodor Wiesengrund Adorno

"The source of music is a gesture, closely related to the source of crying. It is a gesture of relaxation. In the course of this gesture, the tension of the facial muscles subsides, which, while turning the face actively towards the environment, at the same time cut it off from it. Music and crying open the mouth and give vent to a blocked humanity. (...) Melting in tears and in music in which there is nothing human, man experiences the flow through himself of something separate from himself, which until now separated from him by the barrier of the world of things. Crying, as well as singing, man enters into an alienated reality. (...) All music in a dying world, even the most justly dying, expresses the gesture of a being who returns, not the feeling of a being who waits."[262]

The above fragment defines Adorno's first way of understanding gestures, through whose writings the word recurs many times in various contexts (often symbolic or metaphorical), thus receiving different scopes of meaning[263]. A cursory analysis of the philosopher's views can be very carefully distinguished between at least two meanings in which he uses the term in the musical context: (1) **a gesture in the abstract sense**, made by the creator as it were, in and through the work of art as its effect or exemplification of an idea, will, or establishing the musical work as its source; (2) **gesture in the reproductive**, technical sense, as a kind of "X-ray" of a musical work, its structure, and is exemplified through sonic matter and notation. At the same time, the strictly performatively understood gesture, deriving from the performance of music and from the playing of instruments, becomes for Adorno a full-fledged element of the composition only through the composer's work, transformed (not "transplanted", but reconciled, thus containing an element of self-reflection as an objectifying element) from psychophysical activities. As in Casirer's work, the paremia *ars simiae naturae* – art as nature's monkey [264]– is explicitly rejected here, because the *mīmēsis* of the surrounding world must be devoid of subjectivity[265]. Through a reflection

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suggested a specific paradigm in which the full and proper meaning of a gesture is available for understanding only in the appropriate context, i.e. in its "natural environment", at the moment and in the presence of its execution, in which even the smallest nuances are perceptible, while the furthest even advanced mathematical and physical analysis inevitably weakens the power of the gesture. This paradigmatic shift may be interesting, however, because gestures can be transformed from their ontological, creative context to a digraphic process. *Ibid.*, pp. 862-863.

[262] T. W. Adorno, *Filozofia nowej muzyki*, transl. F. Wayda, Warszawa, 1974, pp. 174-175. [translation after Wayda done by myself]

[263] The translator himself notices this, leaving Adorno's *Gestus* as more intuitive than directly expressed, understood more as a "way", "behavior", "meaning" of music than its styles, more as an "idiom" than "notation"; stretched etymologically between "sense" and "gesture" in the strict sense. T. W. Adorno, *Towards a Theory of Musical Reproduction. Notes, a Draft and Two Schemata*, transl. W. Hoban, Cambridge, 2006, p. XX.

[264] S. Raube, *Sztuka jako symboliczna interpretacja świata w filozofii Cassirera*, [in:] *IDEA – Studia nad strukturą i rozwojem pojęć filozoficznych*, XXVII, Białystok, 2015, p. 105.

[265] T. W. Adorno, *Teoria estetyczna*, transl. K. Krzemieniowa, Warszawa 1994, p. 358-360.

on the gesture, expressed in passing, Adorno tries to get to both the core of music and that which has the power to invalidate it.

In the philosopher's writings on music, we can find many such gestures: crying, tension, opening, closing, breaking, introducing, progress of the spirit, movement of the spirit, and the like. Adorno's reflection on gesture, however, is essentially in the context of the development of new music, which is to take place through the use of a technical element in art, which Varése is supposed to represent, and thus "opened the way for expressing precisely such tensions that aging new music ceases to know".[266] At the same time, Adorno criticizes the gestures of the past, including the concept of Wagner's *Leitmotif*. In his opinion, this motif cannot be both a medium of expression and a true musical gesture, because the emotional content is evoked too mechanically. The relation between leitmotifs and referents of what they represent or characterize does not appeal to every perceptor as the composer expected. This causes the music to become "spatialized", by which Adorno actually means *mímēsis* at an insufficiently deep level, repetition [267]rather than processing. In this case, the spatialization takes place through rhythmic ostinatos, which result from the ubiquitous fanfare structure. On the one hand, this stagnation brings to mind "musical propaganda", and on the other hand, it transforms into a separate gesture. Iwona Młoźniak writes more about this process:

> " With this concept [gesture of stagnation, spatialisation], the philosopher defines a doubly empty musical movement: empty in terms of change in time and meaning, where the musical content is supplanted by the sound effect. This results in a lack of musical development. In Wagner's case, the gesture changes into a motif, which leads to the staticization of the entire composition, since the musical material does not undergo harmonic or rhythmic development (...) "A gesture can be repeated and strenghened, but not 'developed' "[268] – every succession or change is therefore an illusion of perception. Adorno associates this feature of Wagner's music with mimesis in the sense of imitation without the possibility of reconciliation between imitation and imitation. This is the regressive aspect of music subordinated to gesture."[269]

[266] M. Krasińska, *Muzyka nowoczesna jako sztuka radykalna – filozoficzne ujęcie autorstwa Theodora W. Adorno*, [in:] *Filo-Sofija* no 27, pp. 203-205. [translation after Krasińska done by myself].

[267] However, Adorno does not seem to take into account that this type of repetition is also a form of anthropocentric, perceptually oriented preservation of gestures in short-term memory, allowing for the observation of the construction of new contexts. *Cf. Ibid.*

[268] Internal quote from T. W. Adorno, *In search of Wagner*, transl. R. Livingstone, Verso, Londyn, Nowy Jork, 2005, pp. 23-24. Polish translation: I. Młoźniak.

[269] I. Młoźniak, *Muzyka jako sztuka szczególnie filozoficzna? o filozofii muzyki T.W. Adorno*, pp. 4-5, [in:] E. Starzyńska-Kościuszko, A. Kucner, P. Wasyluk (ed.), Festiwal Filozofii VII *Filozofia i muzyka*, *UMW 2015*, Olsztyn, 2015, pp. 117-132. [translation after Młoźniak done by myself].

This kind of music is reminiscent of the visual arts, which testifies to the weak condition of the times and music itself, as it leads to the annihilation of its very core. For the gestures established by the act of composing express, according to Adorno, deeper epochal tendencies, which are also gestures in themselves, but highest-order gestures[270].

According to the philosopher, pre-social, anthropological intuitions invalidate some elements of the theory of *mȋmēsis*, understood here in its simplest dimension as a deictic form on the one hand, and as a pleasant, albeit primitive, form of subjective empathy and compassion on the other (as Horgan points out, however, it should always be an action shaped by the aforementioned progress of the spirit)[271]. For Adorno, the creative impulse as a function of art, engaged in life (i.e. "being-in-the-world", including ideas) does not consist only in reproduction, mapping, and thus standardization[272], but in expanding on the level of sonic, kinetic and somatic experiences, i.e. offering the listener new conceptual or sensory knowledge resulting from the representation, illuminating the depicted object with a new light (see Bruner's effective astonishment, chapter 2.4.2). including, how Horgan interprets it, the logic of an negative ("inverted", changed) lexis[273]. In this perspective, only atonal or twelve-tone music, albeit at a completely different, hierarchically higher level of composition, is an perfect way of communicating, because it is through it that pure abstraction and social criticism are realized. The sonic material used for the latter is supposed to be "esoteric, alienated, negativeist, abstract".[274]

> "Divergent media find their unity, the unity of art as the right of their imitation. (...) Works of art are objects whose truth cannot be represented otherwise than as the truth of their interior. Imitation is the path that leads to this interior. Works of art speak like fairy godmothers in fairy tales: you want what is unconditional, let it happen to you, but in a changed form beyond recognition."[275]

A gesture of breaking with tradition[276], the Nitschean-Wagnerian one, reaches, according to Adorno, its climax in Schoenberg's rejection of tonality[277], implicitly a response to the "emptiness" in the state of the world at the beginning of the 20th century: unfulfilled *fin de siècle,* on the threshold of two great wars, social changes, totalitarianisms, the birth of popular culture and the cultural industry, which lead to Bourdie's symbolic violence. It is a

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[270] I. Młoźniak, *op. cit.*, p. 121-129.
[271] H. Horgan, *Thinking as Gesture from Adorno's Essay as Form*, p. 9-10 [not published].*Cf.* I. Młoźniak, *op. cit.*, 131.
[272] I. Młoźniak, *op. cit.*, p. 125.
[273] H. Horgan, *op. cit.*
[274] M. Pasiecznik, *Porno Adorno*, [in:] *Didaskalia*, vol. 123, 2014.
[275] T. W. Adorno, *Filozofia nowej muzyki*, *op. cit.*, p. 231. [translation after Wayda done by myself].
[276] A. Jarmuszkiewicz, J. Tabaszewska (ed.), *Tradycja współcześnie – repetycja czy innowacja?*, Kraków, 2012, p. 80.
[277] M. Pasiecznik, *op. cit.*

kind of gesture of despair, an attempt to get out of the crisis of ossification. It is not a gesture of negation, but a gesture of response to emptiness. Adorno emphasizes that symbols, linguistic metaphors, and thus gestures tend to become independent in relation to their symbolic function in new art. Art absorbs and uses them because they have lost their original meaning[278], thus becoming a "speechless" art[279].

> "Adorno glorified the abstract character of musical material, proving that there is real critical potential in it. He postulated the abandonment of the "trite communicativeness" of music, defining its relation to the world as negative: the more alienated music is, the deeper it represents social criticism."[280].

It can be seen that the hierarchy of abstract gestures is also clearly drawn here, to which their transformations and compositions lead into both lower (e.g. performance gestures) and higher-order (e.g. the entire musical work). This perspective seems to be illuminated by another statement by Adorno:

> "**A work of art is the result of a process, as well as the process itself in a state of freezing.** It is what rationalist metaphysics at its summit proclaimed as the principle of the world, the monad: the center of forces and at the same time the thing. Such an image of oneself is in any case imposed by tradition, an image of something living and authentic, which Goethe used to call *enteléchia*[281], synonymous with monad. It is possible that the concept of purpose, the more problematic it becomes in organic nature, the more intensely it has become drawn into works of art. As a moment of spirit embracing the whole epoch, intertwined with history and society, works of art lean out of their monadicism, although they have no windows. (...)The argument about the monadological character of the works is as true as it is problematic'."[282]

In this way, gestures in the abstract sense smoothly move on to their second understanding, namely as musical material. It should be noted here that, despite the criticism of flat mimetic ontologies already discussed, Adorno does not reject *mímēsis* in general. He conceives of gestures as forms of an "X-ray" of a musical work, i.e. a representation of all the elements hidden under the surface of the audible sound in its context, contrast, and construction. All of them are rooted in musical notation, because musical notation is a

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[278] T. W. Adorno, *Teoria estetyczna*, *op. cit.*, p. 176.
[279] A. Jarmuszkiewicz, J. Tabaszewska (ed.), *Tradycja współcześnie – repetycja czy innowacja?*, *op. cit.*
[280] M. Pasiecznik, *op. cit.* [translation after Pasiecznik done by myself].
[281] ἐντελέχειᾰ [*entelécheia*] – purpose of the development of matter, determining stages of development and contextually staged ways of existence. *Élan vital*. In a way, *entelécheia* is close to the doctrine of palingenesis of the world. There is also *entelécheia*, very ideologically close to the aspect of purpose in a musical gesture.
[282] T. W. Adorno, *Teoria estetyczna*, *op. cit.*, p. 327. [translation after Krzemieniowa done by myself].

graphic trace of construction, "the dialectical equivalent of utterance".[283] In this sense, the notation is gestural and mimetic, because as a graphic image it "masks" the elements of the gesture. Adorno derives this understanding from chironomic notation, although in the light of some new research this seems to be an untenable combination[284].

According to Adorno, notation has its three elements[285], [286] which are clearly reminiscent of Peirce's Firstness, Secondness, and Thirdness:

(1) **Mensural**: denoting the unambiguity of an expression through symbols (notation) that can be reduced to objectively measurable elements.

(2) **Neumic**: defined by the disambiguation of the uncertainty of the mensural elements. It is the derivation of a structural element directly from the symbols through the directness of performance. *A quasi-form* of intention, of meaning, carrying within itself an iconic internal "image", a mimetic element;

(3) **Idiomatic**: a higher-order compound, a certain function of combining syntax with music, grammatical, but also rhetorical or explicit meaning;

Adorno concludes: "The task of musical interpretation is to transform the idiomatic element into the neumic by means of the mensural."[287] In this sense, the notation contains meaning (*Darstellung*, presentation and representation at the same time). Through sensual similarity, there is an imitation of musical symbols, including reproduction through expression (mimetic or mimic value).[288] There is also the opposite effect (reversed, negative lexis), although not the opposite – through non-sensory, i.e. mental (metaphorical, abstract) similarity, there is an imitation of extra-musical ideas [289]or gestures of the spirit[290] (semiotic value, materialization and communication of meaning). For the above reasons, Diego Castro-Magasa, commenting on Adorno, recalls, in addition to the already mentioned Hatten and Godøy, also the statements of François Delalande, a philosopher writing about gestures in

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[283] D. Castro-Magasa, *Gesture, Mimesis and Image: Adorno, Benjamin and the Guitar Music of Brian Ferneyhough*, [in:] *Tempo*, 70 (278), Cambridge, 2016, p. 16-17.
[284] This argument seems to result from the incorrect (although established in musicology and music theory) connection of the idea of the so-called chironomic notation with the chironomic tradition of the oral-performative transmission of the music, consisting in interpreting the melodic motion from the movements of the conductor's hands, and thus the emerging idiomatics of translating one into the other (understanding after Hugo Riemann).
[285] D. Castro-Magasa, *op. cit.*, p. 17 and next. Nb. In my opinion, Adorno's concept of notation meets Grisey's concept of time as a skeleton-flesh-skin, Godøy's concept of gesture as movement-action-meaning, Tomaszewski's integral interpretation as realization-perception-reception, Chion's types of listening, etc. All of them they notice the specific value of communicating by using similar referents of concepts. **In this sense, it can be said that the grammar of gesture (composing time, space and structures, but also the grammar of notation) is Chomsky's inverse of other grammars of (performing)-listening-analyzing and interpreting, as perceptually oriented.**
[286] *Cf.* T. W. Adorno, *Towards…*, *op. cit.*, direct: p. 67, *Cf.* pp. 56, 63 and next. 158, 187.
[287] At the same time, two paragraphs later, Adorno warns against the fetishization of musical texts. *Ibid.*, p. 67.
[288] *Ibid.*, p. 161.
[289] *Ibid.*, p. 61.
[290] *Ibid.*, p. 170. *Cf.* H. Horgan, *op. cit.*

the communicative approach as meaning in interpretation (the phenomenon of shaping the meaning)[291] and at the same time gesture as a behavioral (performative) model, especially on the example of Glenn Gould's performance[292]: "a gesture is intersection of observable actions and mental images"[293]. **For this reason, strict taxonomies of gestures should not be distinguished, but rather expressive patterns (i.e. not only psychomotor patterns, but also affective ones) should be distinguished**[294]. This image can express directly what Adorno did not explicitly formulate: gesture and affect are two sides of the same coin, the performative gesture leaves a stigma on the sound object[295].

In the light of the above remarks, aimed at reconstructing Adorno's position, the gesture is a peculiar, unifying analogical bridge[296] between abstract, mimetic and performative gestures. This agreement also applies to objective and subjective areas (culture, knowledge, experience).

In addition to the general significance of Adorno's thought, I am also interested in the issue of notation, which is a key problem in the transmission between the composer, the performer and the audience. I believe that musical notation must meet, in addition to the requirement of adequacy and usefulness, which ensure a good balance between universality, but also convenience and explicitness, as well as the requirement of communicativeness, which provides musicians with the comfort of having all the necessary information, and in a way that supports rather than hinders performance. In the case of gestures, especially those understood pragmatically or idealistically as present inside rather than outside the sound structure, information is often dispersed, requiring interpretation, searching for levels of connectivity and differentiation.

In this sense (as a form of Adorno's "X-ray" of gestures) I find very interesting the proposal of notation developed in the milieu associated with the Polskie Wydawnictwo Muzyczne, initiated by Polish composers of the 20th century, e.g. by Henryk Mikołaj Górecki, Włodzimierz Kotoński, Witold Lutosławski, Krzysztof Penderecki, Witold Szalonek, Kazimierz

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[291] F. Delalande, *Meaning and Behavior Patterns: The Creation of Meaning in Interpreting and Listening to Music*, [in:] E. Tarasti (ed.), *Musical Signification Essays in the Semiotic Theory and Analysis of Music*, Mouton de Gruyer, Berlin, Nowy Jork, 1995.
[292] Both in the already mentioned article and elsewhere. F. Delalande, *La gestique de Gould ; éléments pour une sémiologie du geste musical*, [in:] G. Guertin (ed.), *Glenn Gould pluriel*, Montréal, 1988.
[293] *Ibid.*
[294] In this intuition of Delalande I find the functional basis of my own coupled hierarchical and reductive hypotheses. Less directly formulated in: F. Delalande, *Sense and Itersensoriality*, [in:] *Leonardo*, vol. 36, no 4, 2003, p. 313 and next. The same conclusion, expressed more categorically in: F. Delalande, *Meaning and Behavior Patterns…*, *op. cit.*, p. 4.
[295] *Ibid.*
[296] Borrowed by Castro-Magasa from F. Cox, *Notes Toward a Performance Practice for Complex Music*, [in:] M. Claus-Steffen (ed.), *Polyphony and Complexity*, Hofheim, 2002, pp. 70-132. The communicative domains of concept-notation-realization-perception should be treated as separate "languages" into which elements must be translated.

Serocki, etc., and continued today, for example, by Francesco Filidei or Clara Iannotta. The score here is basically traditionally notated, organized into measures, and at the same time introduces a major visual change: the moments of *the tacett* are graphically eliminated, so that the notation resembles a kind of irregular islands. Leaving such graphic shapes reveals at least some of the connections between these structures. Therefore, being aware that the functionality of graphic notation also affects the legibility of gestures for performers, I used this method of notation in the score *visibilium et invisibilium*, which has definitely gained in clarity thanks to this correction.

For the same reason, I have kept the introduction of new symbolic signs to a minimum. The performance techniques and notation of the orchestra's choreographic part are described mainly as text. Still, in order to understand the techniques presented in terms of the slogans, it is necessary to read their detailed description contained in the legend. I also try to explain techniques known and used in newer music, but non-standard from the perspective of traditional performance, e.g. philharmonic performance.

2.9. Observations on the margins of *epistēmē*

The selection of sources presented in this chapter has revealed, I think, the breadth and diversity of the approaches to gesture understood specifically musically, but necessarily supplemented by a more general reflection. The way in which the understandings of a not necessarily musical gesture are developed or processed is very complex, both in the practical and abstract sense. From the point of view of this dissertation, invoking other, most recent currents of this knowledge would cognitively contribute a lot, but it would not necessarily be able to resolve anything within this already complicated matter. For this reason, I omit some of the very important humanistic, linguistic and philosophical reflections, including, for example, the thought of Adam Kendon (to which both Godøy and Mazzola refer), but also considerations of theatricology, or those related to dance theory (e.g. the concept of ekphrasis), ethnomusicological and sociological considerations (e.g. in the contexts of non-Western cultures, their ritual gestures, including religious and magical ones) and many other threads. by which the understanding of the described phenomena could be broadened. Given that my main goal was to methodologically organize the basic, permanent principles governing the reflection on the musical gesture, that is why I had to make a decision about the necessary limitations.

In this work I have emphasized several times that while there is a general agreement on the definition of music as the sonic motion, it is impossible not to notice the disagreement on the question of the reference of this motion (movement), i.e. the determination of whether

the gesture (1) necessarily refers to movements performed by a human being, or rather (2) can refer to other beings: material and immaterial, real and virtual.

In the concepts quoted above, it was clear that Merleu-Ponty was inclined towards (1) by adopting the perspective of studying and describing the world by the measure of own body. The same is true of Smalley, who limits spectromorphology only to music, in which only motion related to sensual experiences can be found. Even Godøy and Leman postulate the same, adopting the assumption of embodied cognition, i.e. the reproduction of the experience *hoc loco*, rather than a metaphorical or iconic representation of it.

On the other hand, position (2), as can be seen from the reconstruction of his views, is adopted by Adorno, because despite the mediation of all gestures and notations in performative gestures. Similarly, Mazzola adopts option (2) and, as can be deduced from his writings, Hatten. Paradoxically, Godøy's and Leman's statements can also be classified here, on the basis of their statement about embodied cognition as a matrix of human behavior, a kind of image of cognitive experiences, which strongly points to its mental-perceptual provenance[297] , although due to its being taken out of its original context, it also allows for the preparation of these experiences, e.g. inventing something that has never been experienced.

The question of whether the gesture is somehow in the mind as a form of a sign to be read, or whether it is physically present in the body as a direct reproduction of experience, or even as an elicit of specific bodily reactions, I leave unresolved here, as this is an ontological question. Being convinced of Ingarden's phenomenological approach, I would suggest here an answer akin to Ingarden's answer about the nature of a musical work[298]. **I accept both positions equally, which is why I consider even the most presemotic, or in a broad sense abstract gesture, to be semiotic, and at the same time the most semiotic – to be read outside the systems of signs.**

This attitude results from the fact that both processes complement each other (which, by the way, is the foundation of Tagg's concept of interconversion of gestures, to which I will return later), explaining the phenomena of "translating" visual shapes into movement (motion), sound and others, expressing the necessity of reducing them on the one hand in a necessary way to the movement of one's own body, and on the other hand through thought processes and the need to adjust the spatial perspective of this movement to allow them to be compared to any another material, immaterial, invented being, as well as to internal reflexes, sensory experiences, which have no physical substrate.

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[297] R. I. Godøy, M. Leman (ed.), *Musical Gestures…*, *op. cit.*, pp. 103 and next.
[298] R. Ingarden, *op. cit.*

Thus, when we talk about gestures, the decisive factor is not so much their iconicity as their expressiveness (not "I think a thing" but "I think about a thing"), [299]not so much their systemic character as their generativism and transformativeness (the lack of a universal vocabulary, in which we can see the difference from the theory of affects), not so much their concretization as their impression-making character (not expressing the mean in a logical sense), not so much their concreteness, as much as their abstractness (because they are at least taken out of their original context), not so much their generality, but their individuality (reduced to the individual perception of the listener). At the same time, even the most abstract gestures are elements of grammar and the semiotic system in the work.

In addition, this chapter is not intended to build its own definition of gestures. This is the subject of the following extensive Chapter 3. Here I would just like to mention that the understanding of gesture which, following the example of the authors in question, I adopt in this dissertation and the resulting definition of it, for the reasons presented here, is deliberately **broad and complex**, in accordance with the hypothesis of Cadoz and Wanderley that the opposite, i.e. **narrow and simple, cannot exist**[300]. I believe that gestures can be applied both to the smallest indivisible structure, even – as Smalley says – to a single note, but also to the whole formed motion at the highest hierarchical level of the work of art, i.e. to movement, process, and even style or period, as can be interpreted from Adorno. I believe that, in a sense, all the works produced are in some way, sometimes minimally, sometimes to a large extent gestural, which is best justified by **the conceptualization**[301] common among composers as a method of operation. Gestures are a communicative intermediary for authors with semiotic and presemiotic attitudes, as well as materialistic, idealistic, relational or practice-oriented. They also mediate Cassirers pure meaning and the opposite iconic (expression) or metaphorical (representation) meaning. After all, they are used to communicate both Lehmannian conceptual music and music concept-based and relational music as well as Hanslick music understood as absolute. To sum up, I think that this approach is not so broad that it does not have a framework or become a collection of random concepts.

In my opinion, the gesture makes it possible to implement an important postulate of Susanne Sontag[302], namely that:

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[299] M. Rakoczy, *Koncepcja symbolu u Cassirera a powrót na „szorstki grunt": Co Wittgenstein wnosi do badań komunikologicznych*, [in:] M. Wendland (ed.), *Historia idei komunikacji*, Poznań, 2015, p. 169.
[300] C. Cadoz, M. Wanderley, *Gesture Music*, [in:] M. Wanderley, M. Battier (ed.), *Trends in Gestural Control of Music*, Paryż, 2000, p. 74.
[301] H. Lehmann, *Cyfrowa rewolucja…*, *op. cit.*
[302] The author was influenced by Bruner's concept of effective surprise, the uniqueness inherent in the work, not the system, mentioned later (chapter 3.2.4).

"Today it is important to heal our senses. We must learn to see, hear and feel more. Our task is not to find as much content as possible in a work of art, nor to squeeze more content out of it than it has. We have to put the content aside to be able to see the work at all."[303]

After all, it is not about Flusser's "obsession with meanings", "obsession with objectification", i.e. reducing everything only to objectively measurable parameters, or subjective "obsession with experience". It is about the ability to look at a gesture, at a work at the same time, using all three orders, and then, on the basis of the results, adapt theory to facts, and not a *priori* facts to theory. Tomaszewski writes about it: "(...) **In the musical work itself – not outside it – lies the main causative cause of the work's impact,** generating directions and categorical quality ensembles in particular phases: sound realization, auditory perception and sign (symbolic) reception of the work. It determines the categorical shape of its verbalization."[304] That is why, when thinking about a gesture, it is important for me to have Vilém Flusser's intuition to treat **the gesture first and foremost as a kind of prosthesis, an extension of the creator "hands", an evolutionarily created additional organ for realizing ideas**.

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[303] S. Sontag, *Przeciw interpretacji*, transl. D. Żukowski, [in:] S. Sontag, *Przeciw interpretacji i inne eseje*, transl. M. Pasica, A. Skucińska, D. Żukowski, Kraków, 2012, pp. 25-26. [translation after Żukowski done by myself].
[304] M. Tomaszewski, *Ekspresja utworu muzycznego jako przedmiot badań. Rekonesans w sferę twórczości lirycznej „Wieku Uniesień"*, [in:] *Teoria Muzyki*, 14, 2019, p. 24. [translation after Tomaszewski done by myself].

3. Musical gesture – reconstruction of its structure and function

3.1. The object (construction) of the musical gesture

Having presented a general theoretical basis for the most important concepts of the musical gesture currently under consideration and some of their implications that can be interpreted from philosophical, aesthetic and linguistic theories, I can proceed to discuss the generalized concept that emerges from these particular approaches. Gestures create complex relations both internal and external to the work of art in which they are founded. This synthetic property of the gesture necessarily entails, for example, the problem of its perception, while the functions are determined by the apprehension of space. Therefore, I am aware of the shortcomings of the method of such a description, i.e. breaking it down into its constituent elements, which is nevertheless necessary for a methodological approach.

3.1.1. Practical interpretation of the definition of Hugues de Saint-Victor

Godøy and Leman proposed the most synthetic summary of Hugues' definition, preserving his tradition of understanding on the one hand, and opening it up to various applications on the other. By accepting it, I reserve to myself in some respects the right to make the necessary transformations. This synthesis of gesture can be presented as follows[305]:

(1) **Motion**, i.e., the physical displacement of an object in space, a change in the physical position of an object that can be objectively measured;

(2) **Meaning** that implies the mental activation of experience[306];

(3) **Action**, that is, the intention of a motion that is aimed at achieving a goal.

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[305] *Cf.* R. I. Godøy, M. Leman (ed.), *Musical Gestures…*, *op. cit.*, p. 13 and next. This structure is somewhat similar to the structure of a musical work by Lehmann: concept-medium-work (as a form of aesthetic experience; *Cf.* H. Lehmann, *Rewoulcja cyfrowa…*, *op. cit.*, p. 134), or Alan Parkhurst Merriam's related and much more respected distinction of the components of music research: medium (movement) - concept (meaning) - aesthetic experience (action and perception) - economics (determining the functioning of music in terms of the dissemination and use of technology; *Cf.* A. P. Merriam, *The Anthropology of Music*, Illinois, 1964). Following Smalley's lead, it seems, however, that technological listening and economic hermeneutics explaining the technology used do not contribute much in terms of understanding the musical structure itself, but rather contribute insofar as they influence, for example, the availability and technical potential of instruments for composing by composers (therefore reason, it has potential, e.g. within the integral interpretation proposed by Tomaszewski).

[306] Fundamentally, I see the problem with this approach in the fact that both meaning and action are perceived, and therefore a directed motion is experienced on the basis of which its "goal" can be interpreted, which is also a mental activation of the experience. For this reason, I divide these elements into an objectified element, i.e. meaning mediated by symbols, culture, the need for dictionaries, etc., and a subjectivized element, i.e. an action that is assigned a network of individual experiences as a descriptive matrix, depending on the day, mood, etc.

This, in my opinion, is a good starting point for considering the objective components of the musical gesture, as it finds its three equivalents in methodologies of quite different provenance, e.g. semiotic and audio-visual. As I noted earlier, Tomaszewski points out the equivalents of these concepts as part of his concept of integral interpretation, but changes their order: Realization (Motion)-Perception (Action)-Reception (Meaning). These three modes of perception also correspond to the three modes of listening according to Chion: causal (analytical, the process of bonding the source), semantic (interpretive, bonding phenomena with semiotic systems) and reduced (interpretative, consisting in detachment from the sources, causes and effects of sound in favor of synthesis and description of qualitative higher-order values). There is also a clear connection with the triads of Hatten, Adorno, Grisey and others, which I have already described. Thus, certain axes of division are clearly drawn here along the objectivity and subjectivization of description and the perception of internal and external properties of movement and expression. In this sense, all the practical components of Hugues' definition are provided.

3.1.2. Motion as objective measurability

On the one hand, the motor value of a gesture can be described as the movement of a part of the body, i.e. through its dimensions, topological position, speed, intensity, description of its continuity, time, etc., but also as a virtual trajectory of sound motion, i.e. through properties that can be described both physically (time expressed e.g. in milliseconds, pitch defined as frequency expressed in Hz) and musically (time expressed in rhythmic values and tempos, pitches expressed by placing on the staff in the context of the keys: in addition, indescribable harmonic, textural, timbre phenomena, etc.).

In my view, then, attribution depends on the adoption of the perspective of space and dimensions, which determines the attribution of morphology and function. The objectivity of this description results from the possibility of examining it with appropriate apparatus in accordance with established procedures, creative and research "grammars". At the same time, following Chomsky's thought, reality is capable of generating and transforming infinitely long procedures, which is why these methods of objectification are open. In this sense, progress in art and research is possible.

A hypothetical situation will serve as an example of the above reasoning. A theoretician can conduct an analysis of Mozart's *Violin Concerto No. 2* in G major KV 219 within such normative as descriptive[307] procedures of harmonic and formal analysis, which

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[307] *Cf.* M. Gołąb, *Spór o granice poznania dzieła muzycznego*, Toruń 2012.

have been established by Mozart's contemporaries (e.g. Friedrich Wilhelm Marpurg, Heinrich Christoph Koch), or in more recent reflection (Hugo Riemann) and further reflection (analysis by Kazimierz Sikorski, Heirnich Schenker, *GTTM*, Leonard B. Meyer, harmonic proposal by Hermann Erpf, Tadeusz A. Zieliński, Ernst Levy, etc.). However, such an analysis can also be based on any objectively measurable parameter, e.g. determination of bowing, applicature, concretization and proportional correlation of tempo, determination of conducting patterns, examination of spectrograms of recordings, study of sociological, economic, ethnomusicological, qualitative and quantitative relations, statistical relations, theory of topos according to Mazzola, etc. A dancer can prepare a choreographic movement that will imitate or respond to the motion of sounds according to specific techniques, styles and currents codified for dance as a field of art, but he can also make a movement interpretation of the musical work using the Émile Jaques-Dalcrose method[308].

3.1.3. Meaning and Action as Subjective Elements

The mental activation of experience may refer to life, situational, sensory and other experiences own in the mind of the recipient, but also to symbolic experiences, i.e. will, knowledge and signalling of semantic meanings. In fact, it is an action that blurs the line between the two, as it is about the subjective perception of the sound matter in the musical work, both on the factual and abstract level.

For this reason, it is necessary to distinguish an area of meaning which, although objectified, for example, by cultural rules, remains individual thanks to the mental activation of one's own experience, both practical, i.e. performing psychophysical activities, and abstract, semiotic, resulting from participation in culture (and thus also naturalization and enculturation) of performing conventional activities. Therefore, in the study of the discussed

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[308] To do justice to Dalcrose's important thought, although not developed in this disseration, I would like to mention it briefly. Dalcrose's intuition about the gestures contained in a musical work was not to internalize movement into the music, but to externalize the music by showing it through body language. For this purpose, a method was created based on eurhythmic exercises, improvisation (including movement) and ear training (e.g. the phonogesture method referring to Gwidon's hand). However, all three elements developed independently take each other into account, which is why, according to Dalcrose, they can lead to the creation of a clear image of internal sound hearing. The basic method of externalizing music is the movement interpretation of a musical work, which focuses on the animated plasticity of movement and its expression, and searches for movement that is both instinctive and aesthetic. Dalcrose proposes a system of twenty basic gestures for interpretation, although nowadays eurhythmic performers often expand this palette depending on their needs, taking into account the perceptual reception of the work and the compositional intentions resulting from the score. The Dalcrose method, very diverse in its practical applications in various local centers, is often developed and enriched with other, related theories. For example, eurythmics performers use Carl Orff's "gestodźwięki" (body-percussion) technique, which involves producing sounds by body movements excluding the voice. They may be the idea that meets the perceived need to produce the so-called "virtual" scales, i.e. setting effects according to a quasi-pitch relationship from the lowest to the highest, e.g. objectophones (Ondřej Adámek) or the currently popular body-percussion performance (François Sarhan). It is also impossible not to mention the dictionary organization of communicative gestures for the purposes of improvisation in the *Sound-Painting* currents.

area, all objectified semiotic theories are of course helpful, but also each time subjective descriptions that see connections with one's own experiences.

The second category derived is the Action, oriented around the internal categories of motion (movement), the qualitative description of the purpose and "intention of the movement" through its trajectories, gravitations, ephemeral sensations, the search for those elements that are perceived as fully subjective from the perspective of the listener, e.g. the nature of the movement, the capture of gravity and tension. Such categorizations as Roy's correction of *GTTM*, spectromorphology with an objectified element in the form of spectrogram testing, or psychoacoustics, including the analysis of the auditory scene, come to the aid of interpretation of one's own reflexes. However, they are constantly embedded in individual "listening grammars" and cognitive experiences. All this creates an incredible field for the researcher of gestures, showing his interpretative artistry, erudition, but above all his own sensitivity.

On the example **of the Central Gesture** of Rubbing a Matchstick (Friction of match), it is possible to trace the layers of carrying out through gestures of analogy. An example of such a *visibilium et invisibilium* is, for example:

Figure. 26. The gesture-reference (Bortnowski) of "friction" and the gesture of the "friction effect" (silence). *visibilium et invisibilium*, mm. 94-99.

The meaning is reflected in the intensity and intention of the musical actions. However, it is possible to indicate here the functional meaning, expressed in the desire or need to turn on the flame of light, together with the accompanying symbolism, e.g. the relation between light and darkness. At the same time, the gesture itself also has its own directionally shaped energy – purposefulness, expression, emotionality – on the basis of which it is in fact possible to determine whether the person rubbing it with irritation or calmly, whether he has steady hands or shaken hands, whether the repetition of the action is deliberate and aimed at achieving a result, whether there is an obstacle, e.g. a sulphurous stick has worn off, etc. These intentions are reflected in the shaping of sound processes: they are not identical with them, but with the help of these intentions, a certain energetic quality, suggestiveness, and effectiveness are transferred.

The aim and intention of the gesture presented above is repetition, but it is weaker and weaker, slower, performed as if with discouragement, until the effect is finally no crystallized.

Figure. 27. Gestures of "friction" in figures *ritardando* and the gesture-reference of "friction" (Bortnowski). *visibilium et invisibilium*, mm. 132-133.

Here, on the other hand, the analogy of the gesture of "friction" is reflected in the repetition in the figures of *ritardando* (in clarinet, saxophone, horn, trombone; slowing down, dying) are juxtaposed with the opposite, simultaneous gesture of rising, building, suggesting, "promising" the possibility of crystallization and the fulfilment of the goal.

Figure. 28. The gesture of the "frictional effect" (harmonic spectre). *visibilium et invisibilium*, mm. 136-139.

The above-mentioned appearance of a full harmonic spectre as a "frictional effect" is, in my opinion, the fulfilment of the promise and the full crystallization of the goal, in which case it is irrelevant that it is a temporary crystallization. The illumination in the light projection that accompanies the gesture, i.e. the sudden turning on of the light and the striking of bell-like instruments, reinforces the sense of sacredness and metaphysical importance of the moment.

In a sense, these gestures can be reduced to their more primitive forms, i.e. the gesture of absence-promise (friction) and the presence-fulfilment of a promise (the appearance of a spectrum) or the absence-non-fulfilment of a promise (silence). I return to this idea in the reductive hypothesis, section 3.3.2.4. This is what the dramaturgy of movement I is based on.

As I mentioned, the metaphorical iconicity does not consist in the precise mapping of the parameters of friction as a prerequisite, although the proportions of its duration, articulation, dynamic intensity, phases are preserved. It's all about preserving *Stimmigkeit*, the compatibility of energy, vectors, which on the one hand provides me with both material "homogeneity" and transformational diversity, and on the other hand, on its basis the recipient will independently interpret[309]. In this way, I create "metaphysical matches" at various levels of composition, which are "friicted" in the process and dramaturgy of the work. I will return to this in the discussion of the hierarchical hypothesis, Section 3.3.2.4. However, I do not mean to imitate or symbolize actual friction, although it is suggested in the following movements – e.g. by juxtaposing visual gestures of friction in *Video-Playback* with the appearance of harmonic spectre in the movement III, but rather with the creation of contextual weaves that support iconic and metaphorical analogies [310].

3.1.4. The 'synthetic' nature of the gesture

Dissecting a gesture into its most basic elements, reaching its primitive, structural components through mental reconstruction, can objectively determine what constitutes a musical gesture, while at the same time revealing the operations and intentions of the creator. However, as I have emphasized many times, compositional grammar is only the reverse of the grammar of listening, and at the same time also notation, performance, analysis and interpretation, etc. Hence the need to pay attention to the phenomenon **of perception as a whole,** a conglomerate of perceptually readable parameters, and at the same time to give it a meaning as Godøy's categories of Meaning or Action.

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[309] In this sense, when speaking in the context of my own piece about the gestures of striking a match, the gestures of fulfilling - or not fulfilling - a promise, I feel as if Lutosławski was explaining the dramaturgy of his *Concerto* for cello and orchestra to Mścisław Rostropowicz, that is, using many poetic terms: and the fact that here the individual -the cello fights with the brass, i.e. with adversities, that it enters into a dialogue, that it leads (the famous *unisono*), and that the piece is as if theatrical... The metaphors used by the composer were so suggestive that they led to the adoption of an interpretation by Rostropovich (looking for "content" in the musical work in order to "explain" it), that the work illustrates the struggle of an individual against the system, in particular the communist one. Knowledge of Lutosławski's aesthetic attitude leads us to consider this interpretation, derived from his own words, as too far-reaching. In order to explain the nuances and shades of my own concept, which can be interpreted freely, and I encourage it, I use extra-systemic metaphors that guide the interpretation. In this sense, the doubly intentional metaphor of musical descriptions is at the same time flexible, suggestive, and destructive of compositional intentions..

[310] Paweł Mykietyn's *Symphony no. 3* can be interpreted in the same way, because although the general associations with hip-hop music are quite obvious (e.g. by analogy to the "looped" ostinato style, the rap style of performing the lyrics, to the scratching technique), not everyone will guess or hear and will associate that the opening gestures of the first part are derived as a melodic-harmonic-rhythmic transcription from a simple rhythmic-timbre scheme of the drum groove, which is what the author declares. This does not prevent the perceptual perception of these shapes as homogeneous gestures. The formation of gestures as this type of analogy does not determine, however, the qualitative contexts of juxtapositions and the ability to compare (search for repetitions and differences) of gestures in the process of the work already weigh on the reading of the idea of larger wholes, and not on reading each note individually as significant..

In this dissertation, I repeatedly use a description "synthetic value" of gestures, structures, and sound objects. I understand this syntheticism, following Cassirer, as encompassing the diversity of juxtaposed representations with a single cognition[311]. In accordance with the above, it is impossible to understand the mechanisms governing this synthesis without penetrating at least to a small extent into certain cognitive processes. Due to the fact that the experiences of short-term memory, which stores the image of the musical work listened to at that moment, are linked to the experiences of long-term memory, which stores the experiences, beliefs and knowledge of the recipient, I will present these experiences in the context of the theory of the audiovisual contract, which deals with the issues of both these types of memory.

Audio-vision as a concept, or rather two opposing concepts finally synthesized into one, was developed by Chion in his studies on cinema. The first element to be observed here is the multimedial context, in which synchronous, auditory and visual sensory data, transmitted through auditory and visual channels of information transmission, add up, which is the effect of synchresis. Multimedia beams are or may be accompanied by the following phenomena:

(1) **The audiovisual contract:** the ever-present situation in which the bundles of media "illuminate" each other and create a relation of meaning (content), contrast (counterpoint), compatibility (*idem per idem*), divergence (independent complementarity).[312] Due to the primacy of the role of a given layer as a space (dimention) of attention, we can distinguish between audio-vision and video-audition[313]. A finite number of transmitted beams of media information, however, can have an infinite number of levels of binding in perception.

(2) **Added value**: the almost ever-present situation in which at the interface of the media beams, a new value is created, which is not present in any of this layers. Zielińska calls it credibility, sympathy, the power of persuasion[314], Chion – sensorial, informative, semantic, narrative, structural, expressive value[315]. [316] It

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[311] P. Parszutowicz, *Fenomenologia form symbolicznych. Podstawowe pojęcia i inspiracje „późnej" filozofii Ernsta Cassirera*, Warszawa 2013, p. 113.

[312] This is a special type of interaction of multi-level perceptual processes.

[313] Media layers as attention spaces (dimentions) are perceived differently due to the heterogeneous neurobiological conditions of each sense, especially the speed of data transmission. Zielińska notes that the eye perceives space earlier than the ear, while the ear notices temporal changes earlier than the eye. L. Zielińska, *Kontrakt audiowizualny*, [in:] T. Brodniewicz, H. Kostrzewska (ed.), *De musica commentarii*, vol. 2, 2010, p. 234.

[314] L. Zielińska, *Kontrakt audiowizualny, op. cit.*, p. 231.

[315] M. Chion, *Audio-wizja, op. cit.*, p. 10 and next.

[316] The exceptions are situations when a rich multimedia context generates a huge sum of various, including redundant, sensory data, and sufficient time is not provided for data resynthesis, i.e. isolating relevant data and synthesizing them into added value, i.e. a higher-order conclusion, and sufficient comfort is not provided to listeners.

makes the viewer believe that this value is "natural", "material" in the work of art (e.g. in the visual layer only), even though in reality this impression is the result of the interaction of many layers and the psychophysical reactions of the recipient himself. Audio-vision becomes audiovision. Therefore, the added value will not only be responsible for the psychophysical reaction, the "emotion", but it will also be information that says something more about the reality described by various media bundles, and resulting from the experiences contained in long-term memory. We can speak of intermediality when value crystallizes, while of ordinary multimediality – when the bundles of media do not find a perceptual conclusion.

The ideological continuation of the relation between dualistic audio-vision is Chion's audio-logo-vision triad[317], in which the word (*lógos*), in its various forms and manifestations, complementing the contexts of visual and audio frames. The relations between the layers in the triad are slightly different from the relations in audio-vision. These include scansion, counterpoint, contrast, contradiction, emptiness[318]. I think that systems generated in relation to other senses: taste, smell, touch, etc., would also need to be distinguished.

It is difficult to explain an audiovisual contract without noting the existence of three more processes taking place in the mind of the recipient, and these are:

(1) **Mental relocation (cf. Smalley's source bonding, Murray-Schaffer schizophonia – Chapter 2.6):** a change in context resulting from a change in the source of a sound, an emitter, with its cause, for example, a mental ignoring of it as a loudspeaker, and instead mentally "reconstructing" its original source. Any technical error destroys perceptual processes, disturbs the comfort and quality of data transmission. Zielińska notices the "extraordinary fruitfulness" of shaping the ambiguity of sound, which makes it possible to manipulate the perception of the viewer and leads to the potential relocation mistakes that are calculated into it[319].

(2) **Mental rendering (braiding)**: the integration of multimedia information in the memory of the recipient, enabling "emotional polyphony". Zielińska gives an example of a rendering between (a) a sound representing "abstract emotions" and (b) an image representing an object at which emotions are to be directed into a homogeneous, synthetic unit, a matrix in the viewer's perception. In this sense, it is possible to subconsciously, mentally "see" something that you have heard and "hear" something that you have seen, and at the same time, thanks to the added

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[317] This triad corresponds to Lehmann's triad of relational music. H. Lehmann, *Rewolucja cyfrowa…*, *op. cit.*
[318] M. Chion, *Audio-wizja*, *op. cit.*.
[319] L. Zielińska, *Kontrakt audiowizualny*, *op. cit.*, p. 235.

value, have your feelings, e.g. sympathy or antipathy, directed at a specific object due to specific contextual relations[320].

(3) **Establishing relations**: through a mental, albeit unconscious, test of similarities, establishing the coherence of the message and differences, which establishes a hierarchy of layers in the case of contradictions or constitutes added value in the case of compability. According to Zielińska, conducting a test in the recipient's perception may manifest itself in a sense of tension and relaxation, promise and fulfilment, satisfaction from the fulfilment of predictions or pleasure from surprise. [321] In the absence of one of the media beams, this test also occurs, but it is not confronted with the short-term memory of the perceived work of art, but with the long-term memory, i.e. by recalling and imagining mental "images" on the basis of experience.

I believe that the processes known from the audiovisual contract take place in the gesture, which is revealed by Gødoy's intuitions about embodied cognition, the motor of motor imagery, coarticulation – especially when it comes to the sound-performative gesture, but also the sound-semiotic gesture, etc. Therefore, also in the case of purely audial gestures, this phenomenon will also occur, because the absent layer of experience, e.g. a visually absent image, will be replaced by images (cf. embodied cognition, motor imagery) stored in long-term memory. In this sense, the musical gesture is synthetic, due to the fact that it is captured by a single act of cognition of Godøy's values of Motion-Meaning-Action.

In the worst-case scenario in which this statement could not be fully upholded, it can be assumed with certainty that a phenomenon similar to the audiovisual contract would occur: on the basis of mental rendering and the test of relations, audial beams would be synthesized into a single whole. In this sense, musical gestures would be synthetic due to the single act of cognition of the various morphologies of its components as unified due to Chion's conception of the "sound myth", and thus the need to search for a higher-order meaning. Chion, as a researcher not only of the relation between sound and image in cinema, but also of Schaeffer's concept, certainly used not only the theory of listening, but also the theory of the sound object, i.e. individuals of such a perceptually unified, synthetic, hierarchical provenance as gesture. In my understanding, gesture is as synthetic as *Klangfarbenmelodies*, Webernian punctualistical trajectories, *chronochromies*, Grisey's instrumental synthesis, or Lachenman's morphologies (types) of sound are synthetic.

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[320] *Ibid.*.
[321] Hence, in my opinion, there is a logical need to introduce certain archetypal perceptual reflexes and "images" that will influence my ennumeration of archetypal reductive forms of gesture.

In *visibilium et invisibilium* , I use some of the perceptual reflexes associated with audio-vision as models for shaping the relation between layers, as illustrated by the following examples.

(1) Divergence: juxtaposing the sound gestures-aggregates and their reverberations with the image of the whip (frusta) struck sharpens, directs attention to the reading of gestures-aggregates as parallels of a physical impact, and reverberation as a form of exhalation, an afterimage (an analogy of air coming out from an instrument observed in *Schlieren Optics*). At the same time, the gesture-aggregate is transformed into gestures of match friction (in the visual layer there is an image of a frustrated impact, in the layer of the audio-playback – a sample of friction), so there is a contextual relocation of similar material shapes [I, mm. 4, 20, 42, 90, 94, 126, 136]. In other words, it's the equivalent of a meowing dog, albeit on a much less manifest, obvious level. At the same time, the intensity and brightness of the light layer remains at a low level, which complements the feeling of unfulfillment in subsequent attempts to realize the effect of the aforementioned friction, and only when the full spectre and bell-like instruments appear (the analogy of lighting a match), does the full illumination take place [I, m. 136].

(2) Counterpoint: the *morendo* gestures in the audial layer are juxtaposed in the visual layer with the powerful gesture of a grasping, catching hand, which actually ends the piece and is, in my opinion, an element that introduces optimism, as a parallel to the "Picardy third" ending, even in spite of the constantly dimmed light and the *morendo* of sounds [VI, m. 411].

(3) Compatibility: the visual gesture, slowing down "spinning" of the spectral tubes in the air by a amateurs enseble is "confirmed" by slowing down and freezing sound in the orchestra at the climax and juxtaposed with the dimming light [V, mm. 356-389].

Thus, I use in the piece all three types of strategies for shaping the relation between media: divergence, compability and counterpoint, which, through visual impressions (*video-playback*, light), contextually and sparingly give the primary audio impressions in the performance certain qualities that are absent in the audial layer itself. This makes mental rendering "emotional polyphony" possible.

I would see the possibility of the phenomenon of mental relocation being created, for example, when the visual strikes of frusta are accompanied by samples of lighting a match [I, mm. 4, 20, 42, 90, 94, 126, 136], or when the visual lighting of matches is assigned various types of sound actions, including, for example, spectre crystalisation [III, mm. 275, 287 - distorted, 288, 304-320, IV, m. 356]. The sense of form that is important to me is determined by the test of establishing relations, i.e. here repetitions and differences, not only by distinguishing between what is a figure and what is a background and the ambiguities calculated in this process

(e.g. a gesture-aggregate stretched over time that has so far functioned as a figure), but also by establishing markers for the stage of dramaturgy (i.e. how the piece itself communicates its own phases – the introduction as an ongoing textural drone [I, mm. 1-3], dramaturgy based on gradual acceleration [I, mm. 4-136], culmination as crystallization "at the end" of the spectre [I, mm. 136-141], ending [I, mm. 142 *al fine*], etc.]).

3.1.5. Ways of comprehension the gesture as a result of the Motion-Meaning-Action relation

Ordering the systems of relations of the layers of gesture triads remaining in the continuous context of the dimensions of space and taking into account the possibility of different levels of their complexion, as well as on the basis of the intuitions, hypotheses, epistemiological theories and practice itself presented in the previous chapter, I see four basic possibilities of understanding the musical gesture, which can be treated together or separately also within a single order in a musical work:

(1) **Pragmatic (formalistic, materialistic) comprehension:**
   (a) Gesture is treated as a structure of sound motion;
   (b) Analogy is used in its concrete, strict, non-metaphorical sense as the only form of drawing a parallel between the non-musical and the musical;
   (c) Motion and Action, in the narrow sense, appear as dominant layers;
   (d) An intra-systemic limitation ofthe forms of Meaning communication[322], where within the system of signs, in this case sound signs (compositional grammar, e.g. variation), all transformations of gestures take place. Such communication of meaning may also result from the grammar of the form (e.g. a stage marker or assigning a "thematic" rank to a gesture);
   (e) An audial and physical understanding of space is used;
   (f) As a rule, there is a minimum of external communication, i.e. the necessary space for the use of doubly intentional musical metaphors, in which there is an acceptance of indelible associations of embodied cognition and avoidance of associations with extra-systemic meaning;

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[322] In my opinion, the meaning in this understanding comes close to Meyer's otherwise criticized intuition that the information content of music should be read in the context of information theory as a stylistic (idiomatic), syntactic formation remaining in reference to perception. The phenomenon in which there is an inversely proportional process between the scope of information content and predictability (meeting expectations) is irrelevant to the fact of the formation of meaning understood in this way: a high probability of a consequence means entropy (low information content), while a low probability of a consequence means a high information content. According to Meyer, the level of information content is supposed to produce an emotive response, e.g. a sense of pleasure or fulfillment, which Bruner would probably call effective surprise. *Cf.* L. B. Meyer, *Emocja…*, *op. cit.*, P. Podlipniak, *Naturalistyczna muzykologia systematyczna wobec poglądów Meyera na emocje i znaczenie w muzyce*, [in:] *Res Facta Nova. Teksty o muzyce współczesnej*, 21 (30), 2020.

(g) The understanding of gesture is primarily presemiotic, and only as a logical fulfillment – also semiotic.

(2) **Idealistic comprehension:**

    (a) Gesture is treated as a structure of sound motion;

    (b) It is justified to present the non-musical in the musical not only as an analogy;

    (c) Motion, Action, and Meaning are treated equivalently;

    (d) Communication is carried out on many levels within and outside the system, where all transformations of gestures are carried out within various semiotic systems, e.g. non-musical translated into musical, including in particular the use of *lógos*, manipulations carried out at various cultural levels: emblematic, symbolic, semiotic;

    (e) A broad understanding of space is used: both audial, physical, and in its other dimensions, including the somatic- or thought-dimension;

    (f) The use of *lógos* is intended to use or expand the experience of embodied cognition, e.g. the strategy of semanticization of relational music; a gesture can also be a figure of speech, a symbol, or a sensorily readable shape of the trajectory of a process.

(3) **Performative comprehension:**

    (a) Gesture is treated as a structure of non-sonic motion (movement), e.g. physical, but also visual;

    (b) Motion, Action, and Meaning are treated equivalently;

    (c) The gesture is implemented within the musical work as a "choreography" or using the performative and visual qualities that the act of performing music contains, i.e. the use of the strategy of visualisation and theatricalisation of relational music;

    (d) Communicative functions are perceived in a variety of ways: from movement transformed into data bundles as part of *HCI* sonification, through meaningful content, including purely performative (executive) and instructional content, performance communication for synchronization, to symbolic and cultural communication;

    (e) The spatial value of the musical work and movement (motion) is exposed, which can be embedded directly in physical space without resorting to doubly intentional metaphors or using the contextual ambivalences of space in both senses;

    (f) Gestures supporting and accompanying sounds, as well as supporting and accompanying performative motion are used.

(4) **Abstract comprehension:**

(a) Gesture is treated as a psychophysical structure of motion, as a self-expression of the creator or performer insofar as he or she has been granted independence in this area;

(b) The structure of the gesture is expressed through the higher-order of composites in the musical work;

(c) Motion (movement) and space are understood metaphorically: Action and Meaning as primary layers, while Motion is placed in symbolic space (dimension), the space of the motion of thought;

(d) Self-expression is directed internally (introversion) or externally (extroversion) in relation to the psychophysical structure of the recipient;

(e) Through gestures, internal states are expressed, but also knowledge or beliefs, e.g. support or disagreement with political reality, or it is done through abstract actions performed in the musical work, such as breaking with the tonal system.

Due to the interpenetration of these comprehensions in one order and the differences between the approach of the composer, the performer and the audience, it seems almost impossible to unambiguously assign a work of art to a specific paradigm. They are more easily applied to describe specific aspects or layers in a work, or to describe the beliefs of composers and juxtapose these beliefs with the reality knowable in the work, which can be fruitful in verification. How do the revealed intentions relate to the composer's *doxa*, and what in turn belongs to the recipient'*s gnōsis* ?

My acceptance of all four comprehension of gesture as legitimate results both from the logical necessity of digesting hermeneutics and from observation in practice, especially in my own practice. In this way, a feedback loop of theoretical and creative work is realized, where both the score influences theories and theories influence the score.

As a consequence, in *visibilium et invisibilium* I attempt to integrate all four aspects of understanding gestures. Thus, there are also pragmatic gestures of a clearly intra-systemic, internal nature in the piece, which are markers of the stage (such as striving for a climax, climax, resolution of the climax), procedural gestures, general shapes of motion, even if they bring to mind physical movement, including the movement of spatial relations. If I foresee the possibility of creating a symbolic reflection on the basis of them, it is only as a result of combining them with others into gestures of a higher-order. This does not mean, however, that lower-order gestures do not have a communicative value, but their "content" is not a target transmitter of symbolic meanings, but rather an invitation to refer to sensory and life experiences, an orientation indicator of the quality and stage of the process, its direction,

"intention", "expression". In relation to the various layers in the work, these lower gestures usually remain in diversity relations.

There are also gestures that are supposed to have images, meanings, symbolisms and references imprinted in them: gestures-references (quotations), gestures that are iconic and metaphorical, e.g. those that reproduce the friction of a match, and the phases, effects or imagined sensory experiences associated with this activity. I try to distinguish the latter type of gestures and they usually function against the background (textural type) as a figure (gestural type) so that they are clearly discernible in the complex layers of dramaturgy. Although they are introduced with the hope of being read, I do not expect it: rather, they are intended to encourage the formation of a general sense of common provenance and, in comparison with the image, to enable identification. For attentive participants of culture, it is opening perspectives to other artefacts, such as *lógos*, musical works or holy books. This group of gestures remains with the other layers of the work, usually in a relation of counterpoint, divergence or compatibility.

I also use broadly understood performative gestures: movement choreography of orchestral musicians [II] and visual aspects of conventional instrument perfrormance – *morendo* movement when performing *ritardando figures* [e.g. II, mm. 221-229], arpeggiated broken chords in the violin [III, mm. 279-288] – and the completely unconventional one, which includes circles made with waldteufel or spectral tubes [I, mm. 42-44, 59-64, III, mm. 287-289, V, mm. 356-389], *Pan-flute* [*air-güiro*] technique [I, m. 4, II, m. 152], striking the mouthpieces of instruments [I, mm. 60-67, III, mm. 291 and next]. The movement choreography of the musicians used in the second movement is deliberately contrasted with the introduction of the presence of the dancers, and is based on concise movements: a sweeping strike on the mouthpiece (corpse of the instrument) [e.g. II, m. 150], various configurations of hands "floating in the air" [e.g. II, mm 150-152], or turned away faces [e.g. II, 158-162]. The movement choreography of the dancers remains here as a layer in the relation of counterpoint, and in comparison with the other layers, much less in the relation of compability. The presence of the dancers and a very general outline of the ideological proposal of their movements is aimed at creating a choreography that is absolutely counterpoint to the sound layer. This is a counterpoint by design, because I do not determine fully the layer myself, entrusting details to the will and imagination of the artists-dancers,[323] but only establishing their synchronization at the nodal points through gestures-strikes.

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[323] Two quotes quoted by Cook in his article *Między procesem a produktem: muzyka jako performans*, translated into polish by J. Dolińska: „Performance is not to present a piece of music, but rather a piece exists so that the performers have something to perform" (quoted after: R. L. Martin, *Musical Works in the Worlds of Performers and Listeners*, [in:] Michael Krausz (ed.), *The Interpretation of Music: Philosophical Essays*, Oxford 1993, p. 123). „A standard among forms of listening (...), which will no longer be perceived as a reproduction, as a reproduction

If I were to point to an abstract gesture, it would be to invite the viewer to poetically understood "levitation": exaltation above the temporal, contemplation of the metaphysical wall between the visible and the invisible, the audial and the visual, the acoustical and the imagineral, which is in itself the subject of this piece, and at the same time the highest gesture in the hierarchy, to which all the processes taking place in the work are subordinated. and so they are in a relation of divergention with him on both levels. Using the zonal hypotheses (hierarchical and reductive) presented later (Chapter 3.3.2.4), I try to maintain uniformity, uniformity of gesture at different levels of complexity. Here, **the Central Gesture** is the friction of the match: both as a gesture, a single sound action, and as a gestural shaping of processes within the larger parts of the piece and the entire musical work (repeating the culmination without reaching a conclusion, until the central culmination, crowned with a conclusion, i.e. a kind of effective lighting of the "match") [V, m. 356]. This contemplation is a kind of breaking of the wall between the visible and the invisible. This is done, for example, by using *Schlieren Optics* in the video-playback layer, which reveals invisible "fumes" of changes in air pressure, including the sound wave itself, or by "hijacking" the acoustic reverberation of the piano by the audio-playback in a caricatured form [I, *cadenza*]. All of this is in its essence a metaphorical "friction" in order to "turn on" the "light" for the eyes (new eyes, metaphysical eyes), sensitive to the invisible, i.e. fluid transitions between types of space, which are also discussed in the fragment of *Bhagavadgītā* quoted in the last movement [VI, mm. 392-408]. I do not present, nor do I expect, a coherent symbolic interpretation, but rather hope to evoke a mood for reflection in the listener. The complexity of the layers and the contexts juxtaposed with them means that each listeners can interpret them in their own way. I have only defined the ideological framework of the movements and selected gestures, illusions, and created "experiences" within which everyone can find their own starting point.

Due to the fact that the idea of a sound spectacle was adopted for this artistic work, i.e. in my opinion a form of spectacle in which sound plays the main role – the non-sound layers are less independent here than the audial layer. Although I use some audiovision experiences, they are still oriented towards emphasizing and contextualizing the sonic layer. For this reason, I use other layers of media quite sparingly, often entrusting the disposition of some details to the performers themselves.

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of the image (with all the usual implications of losing the truth and distorting reality), but as a more direct, immediate contact with a given event" (quoted after: M. Chion, *Audio-vision*, transl. C. Gorbman, W. Murch, Nowy Jork, 1994, p. 103, polish translation also by J. Dolińska. *Cf.* Polish edition of Chion: *op. cit.*, p. 85). Both quotes [in:] *Glissando. Magazyn o muzyce współczesnej, Performatyka*, no 1 (21), 2013. [translation after Dolińska done by myself].

3.1.6. *Prâxis* of comprehension and defining gesture on selected examples

Both the layered structure of gestures and the attitudes adopted towards their relations correspond to fragments of various definitional understandings of this category, which can be found, for example, in the Dictionary of the Polish Language. And so "gesture" there means:

(1) "hand **movement** accompanying speech, emphasizing **the content** of what is being said, or **replacing** speech;

(2) a generous act, done in a solemn way or **for effect**;

(3) **Stage expression: a meaningful movement of the body accompanying the speaking of a character or replacing a word**" [324]

It can be noted that the notions of movement, accompaniment or emphasis of content, substitution of speech, the way in which an act is performed, the achievement of an effect by it – all these elements can be found in the construction of the musical gesture and its comprehension in the process of interpetation and hermeneutics, although they can be expanded or reduced.

In the history of music, one can observe the laborious definition of communities of gesture comprehension and the subsequent attempts to define it. For example, Michał Bristiger writes that:

" 'Musical gestures' is a term formerly unknown in music, but recently increasingly used (…) The use of the term 'sound gesture' in music theory is probably connected with the decay of the traditional tonal system of European music, when musical works lose their traditional construction and their 'structure' can no longer be defined by existing categories.[325]

In this statement, although statements that are otherwise true are used, the one referring to the invalidity of the concept of gesture in the historical perspective seems at least unfounded, not to say erroneous.[326] Nevertheless, when discussing the musical gesture,

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[324] Entry: *gest*, [w:] *Słownik języka polskiego PWN*, [source:] https://sjp.pwn.pl/sjp/gest;2461455.html?utm_source=TradeTracker&utm_medium=display [accesed: 01.05.2023]. [translation after *Słownik języka polskiego* done by myself].
[325] M. Bristiger, *Związki muzyki ze słowem,* Warszawa, 1986, pp. 137-139. [translation after Bristiger done by myself].
[326] The phrase "gesture", which Kamil Lis pointed out to me, can be found, for example, in the treatises of Girolamo Frescobaldi, who compares the performance keyboard practice in with contemporary to hom madrigal style, including Carlo Gesualdo da Vanoza's (compositional practice). In terms of scope, this concept does not only concern pedagogy or performance technique, but also the description of certain properties present in the work. Thus, we can talk about this community of meanings already in the context of early toccatas, canzonas,

Bristiger notes that it establishes the reality presented in the work in a much wider field than the notions of motif, phrase, period, figure and background, or rethorical figure have done and do. No old or new structural or rhetorical concept seems to be able to encompass the essence of musical gesture, even though Bristiger, like Herder or, much more indirectly, Roy, links gestures closely to the source of vocal expression and linguistic syntax.

I encountered a similar situation of not always happy operations on concepts in defining gesture in the Encyclopedia of Polish Contemporary Composers:

> "The term [gesture] is related to the way of composing used by Tadeusz Wielecki, as well as Wojciech Ziemowit Zych. It consists in using individual musical **actions formed** into various but characteristic shapes and treating them as **carriers of energy and meaning** in the composition. The musical gesture is therefore a kind of musical **narrative unit**. It can take the shape of a chord or motif, but also appear in the form of more complex **sound and movement** structures."[327]

The definition presented above does not contain false statements, although the concepts must be interpreted in a tortuous way from this definition, instead of being presented explicitly. The main objection here is, of course, that gesture is treated solely as a technique, a way of composing, and that it is limited to only two composers, which has a number of consequences: ignoring the achievements and intuitions of other composers, ignoring the core, the essence of the concept, its properties and practical effects.

I find Andrzej Mądro's definition more interesting, as it is ideologically related to Tadeusz Wielecki (more on him in a moment):

> "The technique [of gesture] consists in compiling and confronting various meanings and moods, creating music that plays with diverse energy. In gestures, there are **synergy** of musical **shape** and **force** that are **understood intuitively**. And, in fact, they are **quite objective in giving rise to an emotion, subjective only to the attitude of the audience**. The gesture **movement**, generally speaking, is predominantly **about symbolic and aesthetic properties**. This movement has no purpose; it does not lead to anything. Gesture is movement 'in itself', like dance. That is why Giorgio Agamben calls the gesture 'the pure mean', which is one that does not aim at anything. At the same time, it can be **a carrier of meaning**, opening the sphere of *ethos*. Of course, the term 'gesture' has been used in music theory for a long time

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ricercars, and even sonatas and concerti. Similarly, a much broader meaning of "gesture" is formed in the context of *Prélude non mesuré* by Luis Couperin or the work of Johann Jakob Froberger, where the ordering of harmonic, melodic and phrasing processes takes place in the form of organic impulses, motions, sensory properties as very characteristic "flows" ("pendulums"), with a goal-oriented characteristic.

[327] [entry:] *gest muzyczny* [in:] *Encyklopedia Polskich Kompozytorów Współczesnych*, [source:] https://mapofcomposers.pl/terminy/style-techniki/gest-muzyczny/ [accesed: 01.05.2023]. [translation after Encyklopedia done by myself].

as a comfortable **metaphor**. In the broad common sense, a 'musical gesture' usually refers to the **result of the action or attitude of the artist or performer**, but it can be considered as an **expressive sound structure with specific characteristics of movement, shape, and timbre. The musical gesture is a message without words, a message that cannot be expressed in any other way."**[328]

The understanding of gesture expressed in this work stands, as in the cases mentioned above, in a way in opposition to the definition of Mądro, which gives primacy a *priori* to a structure that can be understood idealistically, which is reduced to a compositional technique (not to mention attributing to the gesture the value of "pure", "empty" intentionality). However, he wisely draws attention to the idiosyncratic nature of gesture and the ambivalence of the use of this concept in various situations, and distinguishes, in his opinion, between its colloquial and strict meanings.

A definition of the opposite, because idealistic, although not devoid of certain practical values, is presented by Ludwik Bielawski. Gesture is understood as elementary, but complex and coherent, conscious and controlled **movement** of the body, the only direct means **of human manifestation**. The meaning of a musical gesture lies in a movement gesture. That is why the transformative process of gesture is important from Bielawski's point of view: the author considers it as purely performative in **a performative context**, and thus as a **transformer** of a non-musical gesture into a musical gesture[329]. At the same time, the gesture has its own **meaning, logic, psychological or semantic content**. They appear here as functional elements of the system and complex purely physiological processes, i.e. physical aspects of influencing the environment. Due to the unifying notion of space, Bielawski's gesture can be measured, described in the language of physics, mechanics of motion, and recorded with apparatus.

Another definition of gesture – albeit enumerative and indirect – is given by Grisey, who, as far as I know, was one of the first contemporary composers to use the word gesture directly in the context of his own work, and in a sense similar to that of today. Although he did not always call what he created a gesture[330], he did list the components of his technical workshop that indicate an unambiguously gestural sensitivity:

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[328] A. Mądro, *From Extraversion of Collage to Introversion of Composed Trill – Techniques of Self-Expression in Tadeusz Wielecki's Music*, [in:] J. Posłuszna (ed.), *Psycholgy of Art and Creativity*, vol. 3, Kraków, 2017, pp. 93-95.
[329] L. Bielawski, *Czas w muzyce i kulturze*, Warszawa 2015, p. 175.
[330] However, Grisey calls gesture directly gesture not in his texts, but in program notes and score instructions, from which an image emerges of gestures compared to biological functions (respiratory cycle gestures in *Partiels*, heartbeat gestures in *Prologue*), but also more complex virtual activities that Grisey tried to recreate in sounds along their physicality (as, for example, in the dramatic gesture of opening the curtain "translated" from Piero della

"Harmonic and timbral consequences:

- **(…) Integration** of harmony and timbre **within a single entity,**
- **Integration of all sounds** (from white noise to sinusoidal sounds),
- Creation of a new harmonic functions which include **the notions of complementarity (acoustic, not chromatic) and the hierarchies of complexity, (…)**

Temporal consequences:

- More attentive attitude towards to the **phenomenology of perception,**
- Integration of time as the very object of form,
- Exploration of "stretched" time and "contracted" time, separate from that of the rhythms of language,
- Renovation – over time – of supple metric and **exploration of the tresholds between** rhythms and durations,
- Possible dialectics between musical evolving in radically different times.

Formal consequences:

- More "**organic**" approach to form by self-generation of sounds,
- **Exploration of all forms of fusion and tresholds between different parameters,**
- **Potential for interplay between fusion and continuity, on one side, and diffraction and discontinuity, on the other,**
- **Invention of processes, as opposed to traditional development,**
- **Use of supple, neutral sonic archetypes which facilitate the perception and memorization of processes,**
- **Superposing and placing in and out of phase contradictory, partial, or implied processes,**

Francesca's fresco *Madonna Prado* in *L'Icône paradoxale - Hommage à Piero della Francesca*). Elsewhere he also spoke about spatial effects, placing sounds in an abyss (*mise en abyme*). Grisey's gestural issues may be blurred by the fact that to describe the structures he created, he used the terms Gestalt ("shape") and the word "gesture" interchangeably. At the same time, the composer himself does not seem to be sure to what extent "process" and "gesture" can be opposed to each other (as sound structures representing his three types of time). "Starting with the composition *Epilogue* and *Talea*, I am very intrigued by the problem of acceleration. Is it possible to speed up the process without returning to gesture music? Collon Nancarrow in his *Etudes* for pianola tried it successfully, proving that it is possible to accelerate to the speed of human perception. However, is this possible without the use of mechanical or electroacoustic means? *Le temps et l'ecume* It oscillates between the music of whales, human and insects. The same gesture (rhythm-noise/continuous sound-spectre) passes through a sieve of relative measures of times so far apart that a one-second cell can become the basis of a formal process involving the total duration of a piece. All combinations between these measures of time are possible, but doubts remain as to the possibility of perceiving them," G. Grisey, *Le temps et l'ecume*, [in:] *Książka programowa 43. Międzynarodowego Festiwalu Muzyki Współczesnej Warszawskiej Jesień,* transl. anonymus, Warszawa, 1999 [in:] J. Topolski, *Muzyka Gérarda Griseya*, Wydawnictwo Krytyki Politycznej, 2012, p. 269. Nb. to the rhetorical question asked by Grisey, I also try to answer it in the hypothesis of the zonal structure of gesture. [translation after Topolski done by myself].

–   **Superoposition and juxtaposing of forms** flowing within radicaly different time-frames".[331]

The definitions of gestures presented so far range from the use of the concept of gesture as more or less equivalent to the movement of the body, to the use of gestures in a metaphorical sense, and used to describe certain emerging features of musical sound. In order to show, on the example of the actual value of the broad understanding chosen in this dissertation, I have also chosen the position of Tadeusz Wielecki, who is quite commonly considered to be the Polish "godfather" of the musical gesture, although I personally think that Wielecki is simply naming what many artists have so far tacitly accepted as fact. I would by no means want to deprive him of his significance, his approach to individualism, and especially in the context of his own unique technique and compositional language, but it is impossible to ignore the issue I have already raised, that the notion of gesture has been hatched processually for centuries. I believe that Wielecki's definition is the right basis for this synthesis.

He talks about his technique and his language:

> "(...) The essence [of the gesture] is the **dramaturgical indivisibility** of a motif, of a musical whole. It is, therefore, a kind of musical event which cannot be reduced to a more simple form without compromising its essential function, that is, the musical element of action. And then it is something that should have the character of **a sign**. It will not be a gesture simply a motif or some abstract sound cell. In fact, it is about transferring the principle of gesture as a body reflex to the area of musical discourse. A reflex containing a message, although without words. Man makes a gesture with which he communicates his own feeling of things, some inner truth of his own. But such a gesture has a musical value: it has its own **energy**, rhythm, tempo, a definite duration. Transferring these characteristics to sounds is doable. But in addition – and here we touch the essence of the matter – these elements are the carrier of **expression and meaning**. And since the essential requirement of a musical gesture is its distinctiveness, characteristic, I see in the method of composing using gestures the possibility of music that plays with words, with diverse energy. And also the possibility of obtaining greater musical plasticity of matter and – independently – giving sounds a humanistic sense to a greater extent than they have when they are treated as a pure construction. (…): My goal is to **refer to the deep, inner layers of the psyche**. During our communing with music, we are confronted with the unlimited

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[331] G. Grisey, *Powiedziałeś spektralny?*, transl. M. Mendyk, M. Mroziewicz, [in:] J. Topolski, *op. cit.*, pp. 398-399. [transaltion after J. Fineberg: G. Grisey, *Did You Say Spectral?*, transl. J. Fineberg [in:] *Contemporary Music Review*, vol. 19, part 3, 2000, p. 1-3.]

world, with transcendency. Musical and artistic action **results from communication with another human, but towards** God, the Absolute".[332]

3.2. The subject of the gesture

"The structure of music comes together with the structure of human. And then something seems familiar, something is symphatic, something is irritating, so it's a problem how you shall come to the terms with irritation: are you shut the jalousie and say "no", or are you open your ears. So I think music should just very kindly invite to open the ears and that's all."[333]

A reflection on the musical gesture as a kind of metastructure is necessarily a reflection on its perception. From the very beginning, gesture has been understood communicatively as the transfer of ideas or abstract data from person to person, performed in a way for the sake of the other person and the possibility of reading it inherent in that person. As Beethoven wrote on the cover of his *Missa solemnis* in D major, Op. 123 – "Von Herzen – möge es zu Herzen gehen". Bielawski notes that everything that a human being can do consciously, but within a typically human activity, is a movement of the body or a motion of thoughts that have a specific meaning, logic or psychological content. This movement (motion), as the most primal element of sound construction, even earlier than rhythm, places the human being in the conscious act of action in several configurations[334]:

(1) **The subject of action** as a *quasi-mind*, where there is an expression of the will through gesture and the setting of its goals, intentions, ideas;

(2) **The dispatcher of the action** as the subject determining the "script", the "choreography" of the gesture in correlation to the subject's goals;

(3) **The performer of the action** as the executor of the "script", the "choreography" of the gesture;

(4) **The perceptor of action** as receiver and interpreter.

Of course, one person can combine several or even all of these roles, or they can be distributed among different people[335]. It should be noted that the transfer of ideas between

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[332] [entry:] *Tadeusz Wielecki*, [in:] *Wirtualna Encyklopedia Muzyczna*, Polmic, [source:] https://www.polmic.pl/index.php?option=com_mwosoby&id=27&litera=26&view=czlowiek&Itemid=5&lang=pl [accesed: 01.05.2023]. [translation after Encyclopedia done by myself].

[333] A. Nowak, [Rozmowa z Helmutem Lachenmannem, Youtube, 21.11.2021] *Rozmowa z Helmutem Lachenmannem (Polskie napisy) / Conversation with Helmut Lachenmann*, [source:] https://youtu.be/9uVq15nEkpw?t=332 [accesed: 01.05.2023].

[334] *Cf.* L. Bielawski, *op. cit.*, p. 175 and next.

[335] However, it should be noted that anthropologically oriented communication is not the only possible one. Human-machine communication is also important, especially in gesture applications that require *HCI*-type interactions. The "content" of the gesture can be understood in particular as a set of data, parameters, and output

the individual elements of the system of subjects of a gesture may be disturbed either by a lack of competence (including up to the limit of disability, e.g. deafness), inattention, lack of comfortable reception conditions (including those attributable to the creator or performer of the message), error, unconscious or deliberate falsification.

A peculiar perceptual game is revealed here, similar to a child's game of playing a deaf (broken) telephone: at every stage of the message, the gesture loses its informational value[336]. This leads to considerations concerning the levels of gesture substitution (*surogacy*, Smalley) or the distancing from the original source in the concept of transformation as Periceian semiosis. They meet the basic rules of human perception. On the one hand, the constitution of a musical work in experience and cognition[337] causes great fragility and instability, which also leads to the negative consequences of the phenomenon of the "deaf telephone". On the other hand, due to the fact that we are all hearing people in principle, this appeal to embodied cognition is natural and achievable in principle without boundaries or barriers founded in the perceptor (about the boundaries and barriers in other stages later in the dissertation).

This *status quo* is critically channeled when we talk about gestures referring to semiotic or cultural systems. Due to naturalization processes, users of a given culture understand somewhat reflexively, and for external users, for whom enculturation is basically necessary to learn codes, idioms and grammars, it is a more complex process[338]. Similar communication difficulties are generated by *HCI sonification* or mathematical approaches, when the transformation of a gesture into data or formulas (theorems) is associated with a far-reaching reduction of elements that are intuitively very easy to read, but important for

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communicatively understandable by the machine. Other formulations of this comprehension are also possible, especially in the context of the dynamic development of artificial intelligence or posthumanist currents and philosophies.

[336] Milton Babbitt sensed this in his famous 1958 article *Who Cares if You Listen?* What is presented there is, by no means accidental or transitory, but, as the author himself claimed, irreversible configuration of a composer-specialist, anachronistic from the point of view of performers and listeners, creating a difficult, incomprehensible and isolating artifact. Its anarchronism is based on the fact of producing a product of questionable market value, which somehow undermines the previous approach to the craftsmanship of an educated musician, and in terms of aesthetic and technical orientation, has remained essentially in the same place for 70 years. On the other hand, Babbitt himself notes certain gestural values as a threat, namely the creation of a complex, coherent structure that is more than a simple sum of the elements that compose it. **The inability to precisely perceive and remember any of these components causes the event to be displaced in the musical space of the piece, changing its relationship to other events in the piece, and thus distorting the overall structure of the piece.** It is this high degree of "determination" that most strongly distinguishes such music from, for example, a popular song. All "returns to the roots" - new melodies (e.g. in Lutosławski, Grisey, or broadly understood postmodernism), organicity and naturalness of sound (in Grisey, Sciarrino and others) - are, according to Babbitt, in a way futile, because "the paths" has already occurred, and the perceptual-conceptual barrier has managed to constitute. *Cf.* M. Babbittt, *Who Cares if You Listen?*, [in:] *High Fideility*, 1958;

[337] R. I. Godøy, *Motor-Mimetic Music Cognition*, [in:] *Leonardo*, 2003, no 36(4), pp. 317-319.

[338] Here it is worth recalling the famous example from Sachs, in which playing a *raga*, a melody without *gamakä*, ornaments, its "life and soul" (in the Hindu sense) caused the melody to "stop laughing" for the Hindu performer. For the European who asked for it, it was a "transparent", neutral structural intervention. C. Sachs, *Muzyka w świecie starożytnym*, transl. Z. Chechlińska, Warszawa, 1981, p. 193.

meeting the requirements of "grammar". This grammar enables mathematical communication or communication with machines (semantic meaning, movement intent), while revealing many layers that are ignored or depreciated in the intuitive sense, but which are shown by numbers, e.g. statistics, ruthlessness of measurement.

While preparing the premiere of my own work *visibilium et invisibilium*, I addressed a few words to the audience gathered in the concert hall as an introduction. I did not explain the techniques, concepts, meanings, contexts, but by explaining the principle of operation of the *Schlieren Optics* streak imaging apparatus, which is the starting point for the piece, I encouraged the audience to be open, to search for and associate audiovisual experiences with their own experiences, beliefs, etc. Judging by the reaction and the information that came to me after the concert, this short encouragement was a very important impulse in directing the reception.

3.2.1. The subject of the action and the gesture dispatcher

Very high requirements are placed first of all on the subject and the disposer of the gesture who creates or transforms the gesture. Herder would even go so far as to say that the proper requirement is creative genius. At the same time, a certain controversy arises as to the extent to which it is possible to transform a momentary impression by the power of creative expression into an artistic act, or, in other words, to transform psychophysical energy directly into a work of art. Kreidler notes that this may be achievable in the case of some visual arts and improvising musicians, but it seems that the composer does not have a similar position in this case.

> "Writing a score is like creating a list of color data based on the visual impressions of the setting sun over the sea. Where the painter puts light blue and even brighter light blue over it, the composer writes the words "light blue", "even brighter light blue" or "piano", "pianissimo". From the very beginning, he deals with concepts and quantizations of impressions.[339]

Depending on the "strong" or "weak" construction of the gesture, the relation of loss (or gain) incurred in intersemiotic translation, which is, after all, organized around the problem of iconic compatibility, the creation of contexts through juxtapositions and differences, which makes it possible to be effectively surprised, but also the seemingly technical level, such as the legibility of the score, its description and commentary, which are sometimes necessary... – all these elements determine whether subsequent function

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[339] J. Kreidler, *Das Partiturparadigma*, [in:] *New Magazine for Music*, 2020. [translation after Kreidler done by myself].

operators will be able to read the gesture. That is, to note that under the words "piano", "pianissimo", there may be the words "light blue" and "even brighter light blue". Kreidler, however, sees the possibility of blurring the boundaries between music, theatre, conceptual art and media art thanks to new compositional practices in which the score paradigm loses its universal validity. I will return to this by summarizing the definitional, subjective and spatial issues of the gesture (Chapter 3.5).

I have already mentioned the thinking error criticized by Adorno, which can be observed in Wagner, Scriabin, Messiaen and many other artists, who create a particular kind of gestures, sound objects-symbols based on their own conceptual and perceptual grids, and at the same time demand a relatively uniform interpretation through a fairly precise definition of the interpretative "program". Both the performer and the perceptor without prior theoretical training may not be able to perceive such a gesture and its proper meaning and their importance for the entire structure. Yes, he or she will see that it is important, that it repeats itself, perhaps even grasp fluid contextual changes and shades, but he will not be able to synthesize it with the meaning assumed by the author, to which he does not have immediate access[340]. Cook writes about the same when he points out that representation, but not metaphorical, is dogmatic bias (in which, by the way, he seems to meet with Adorno), and performativity, i.e. openness to perceptual sensitivity, is the foundationof pluralism[341].

Thus, the subject and the disposer of the gesture generate (produce) the gesture in a special way, encode it for communication (establishing the grammar and rules of meaning), anticipating a wide range of their own possibilities on the part of the performers and the audience, e.g. by calculating psychophysical reactions to the musical gesture, but also possible damage in the further course of the process of the "deaf telephone". On the other hand, many actions remain in the sphere of the subconscious and intuition, and their effects can sometimes be reproduced only at later stages of the communication process. Gestures can therefore be conscious and unconscious, although the conscious expression of external intention (will) remains a model. At the same time, making these gestures should be controlled, limited by the rules of compositional "grammar" and its reverse, i.e. the "grammar" of listening.

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[340] This is best illustrated by the case of the motive of Tristan's sword, based on culturally naturalized elements (such as fanfare structures or the use of trumpets), contrasted with the theme of *Liebestod*, which is a much higher-ordered and more complicated composition, practically impossible to interpret during reception without knowledge of the composer's commentary or previous in-depth analysis of the score.
[341] N. Cook, *op. cit.*, p. 261.

3.2.2. Gesture performer

High demands are also placed on the contractor. In the first place, it is a requirement that he perform hermeneutic work and discover the gestures encoded by the dispatcher and, filtering them with his sensitivity, make them real. An incorrect interpretation, or even a simple mistake that causes the deformation of even one small element, can lead to a break in the communication chain between the object, the symbol and the interpretant. I will return to this in my analysis of *Cantus in Memory Benjamin Britten* (Chapter 4.3).

The performative role of the performer in transforming his movement through the interface of the instrument into the motion of sound is not only to maintain compliance with the "choreography", the "script" written in the score, but also the idea, intuition of the creator, etc. Therefore, the performer is also required to have Herder's quality of "genius". The performer is the translator, and according to Peirce, the second interpreter of the sign written in the score. The performer's perspective is in fact a Janus-like perspective: on the one hand, his body is an intermediary between his own mind and the environment, and on the other hand, he is a participant in the mediation between the other person's (the dispatcher's) and his own mind.

The performer produces the gesture by transforming his movement into the interface of the instrument, acting actually, and thus effectively producing and modifying this action. Its interpretation as an abstract action, a form of sound coding and communicating one's own artistic independence to the viewer is also important. The performer is also placed in the position of performing accidental gestures other than just those producing and encoding, i.e. those arising in response to sound, such as synchronisation or expressive gestures. On the one hand, they are intended to support the quality of sound-producing as auxiliaries (communicative gestures, synchronisation gestures, e.g. within a chamber ensemble or symphony orchestra), and on the other hand, they accompany, trace (follow) or imitate it (e.g. Gould's swaying, murmuring under his breath).

In a sense, the role of performers other than one might intuitively assume is also revealed here: not only the musician-instrumentalist, singer, conductor, performer, but also sound engineers who perform electroacoustic parts, amplify, set dynamic levels, etc. Similar work, which requires understanding and creative translation, is also assigned to sound directors who record and prepare such a recording for its public presentation. All their technical omissions, shortcomings and inskills weigh on the communication process. A computer, albeit in a broad sense, can also be an executor, as long as it is provided with a certain "self-awareness" mode (e.g., the use of *AI* in real time), so there is no question of a computer as an instrument. A computer may not make mistakes resulting from human

nature, i.e. fatigue or inattention, but it can also experience a crash, error, overheating, incompatibility, voltage surge, unexpected update or other circumstance that may affect at least the slightest impact on the smooth course of execution activities.

Executive gestures are therefore conscious, but they will be accompanied by gestures that are less conscious or unconscious at all. Educational and enculturation processes are of great control importance here, as they can eliminate (or, on the contrary, intensify) certain types of these sub-gestures and build awareness of reading deeper and deeper gestural levels.

3.2.3. Gesture recipient

Ultimately, the process of synthesis takes place in the mind of the recipient as well as a particular type of recipient, which is the researcher of the work. Seeing the performer making gestures, the viewer observes them in three perspectives, corresponding to Godøy's triad of Motion-Action-Meaning (in a changed order) or Peirce's modes of understanding things[342]: (1) First-person (iconic), based on observation and interpretation of one's own experiences; (2) Second-person (metaphorical, symbolic): based on the observation of gesture as a cultural cue; (3) Third-person (systemic): based on measuring and describing gestures as functional elements of the system ("grammar"). First-person communication is always highly subjective, and it is only when it is observed from an external, third-person point of view that it expresses a certain objectivity. An objectified examination of a gesture is therefore always a form of effort, which, as an artist, I have no right to expect from the audience in an in-depth, non-reflexive form.

The basic form of analysis, classified by Schaeffer as *écouter* and *ouïr* listening It always takes place in the mind, as it were, automatically and unconsciously. What counts here is the sensationality of the first- and second-person perception. Of course, it is only when all perspectives are compared that a fuller picture is revealed. The success of higher-order research: interpretations based on cultural codes, signs, etc., depends on the effectiveness of determining these basic associations.

The recipient will be put in a variety of situations of auditory abilities: from *écoute réduite, écouter* and *ouïr* listening during a live symphonic concert (i.e. the sphere of conventions and the possible embarrassment resulting from them) to the studio or home situation, when the smallest fragment of the music can be enlarged many times and in the smallest fragments of the recording very thoroughly examined and understood. In the latter

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[342] R. I. Godøy, *Motor-mimetic…, op. cit.*, p. 317-318.

case, it is also possible to analyse the score, compositional sketches, spectrograms, etc. Perhaps this is the reason why Smalley or Roy avoid the problem of interpretation, and especially integral interpretation as understood by Tomaszewski, focusing on the analysis and interpretation of perceptual experiences. However, auditory experience alone is not enough to reveal the effect of a gesture. It is also necessary to get to know all the other phenomenological platforms for cognition of this ontological entity, which is a musical work. It is only at the intersection of these platforms that a more complete picture of the presented reality can be obtained.

For this reason, Cook, writing about the grammars of analysis and interpretation, draws attention to the construction of grammars for the description of performative and experiential values in their specifically musical sense[343], and what is more, he believes that we should seek forms of dialogue (discourse) between normative and perceptually oriented currents of description[344]. In a way, he even emphasizes that just as thinking in terms of the paradigm of historically informed performance has been developed (both in performance and in analysis or interpretation), so should paradigms of "structural" informed performance[345], which also propose some form of "bridge" between systems of translation. Nowadays, this is basically the main expectation that is placed on this particular type of recipient, which is the analyst and interpreter, but also the music critic or curator.

In a way referring to Herder's linguistic "straitjacket", Cook notes here a certain thinking error, namely the false belief that language can simultaneously describe and contain reality. It follows that what cannot be described does not exist[346]. The metaphorical language often invoked in this dissertation offers the possibility of analytical representation. The more scientific the analytic approach is in the sense of its openness to empirical confirmation or refutation, argues the esthetician, the less adapted it is to the complexity of existing practice. Hence the necessity of correlating or even adapting analytical grammars to compositional grammars and listening grammars. "(...) our words constantly threaten to run away with us": the abstract definition of 3:2 polymetry, as Cook writes, has a perceptual effect[347]. From this arises the necessity to be very careful, because every approach, especially normative or institutionally validated, for example, by inducing "one's own perceptions", creates "one's own truth".

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[343] N. Cook, *op. cit.*, p. 244.
[344] *Ibid.*, p. 245.
[345] *Ibid.*, p. 249. Personally, I see a chance to create a paradigm of structurally informed performance in the field of musical gesture.
[346] *Ibid.*, p. 256.
[347] *Ibid.*, p. 259.

Thus, the viewer performs two types of gestures: mental gestures, i.e. decoding the gesture encoded by the dispatcher, and gestures created as response to the sound, i.e. accidental, performative actions as accompanying gestures: tracking, following or imitating the sound. The latter result primarily from the power and suggestion of the embodied cognition reflex. In this situation, technological listening becomes a controlling but undesirable element. The gestures of the recipient do not have to be conscious, they can be automatically reflexive on both the cultural and psychophysical level. The possibility of conscious reading of gestures by the recipient validates the unconscious gestures of the creator and the performer.
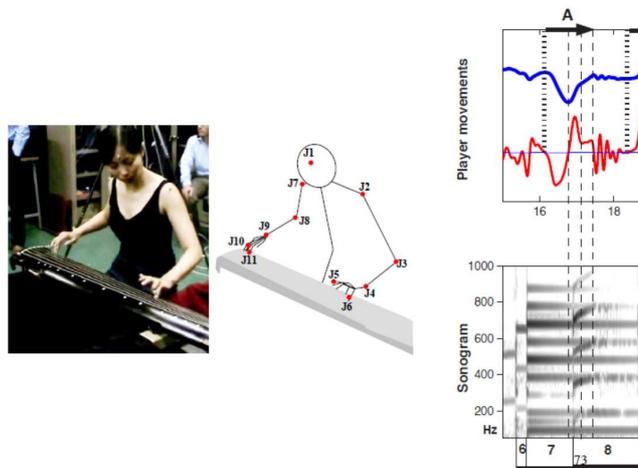
Figure. 29. Godøy's third-person perspective on the observation of the gesture[348].

3.2.4. Perceptually oriented communication

In the previously described "deaf telephone" game, which is the distributor-performer-recipient communication line, the most important gesture will be the one made in the compositional grammar and performance grammar and in other already mentioned grammars, which will not be indifferent to the grammar of listening, i.e. the perception of the recipient.

I believe that the key to gestural communication is to identify this process with a number of cognitive phenomena or theories that have been thoroughly studied and enjoy a well-established position. Phenomena such as the auditory stage, embodied cognition, audiovisual contract and related forms (e.g. effective surprise) very often occur on the basis of the cumulative fulfilment of certain conditions, at the same time explaining various aspects resulting from the occurrence of the phenomenon. In a way, one could say that the gesture is

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[348] R. I. Godøy (ed.), *Musical Gestures…, op. cit.*, p. 133.

sort of intermedial, precisely because of its synthetic nature and multimodal references, both psychophysical and outright conventional. On the basis of the above, I believe that in the case of the perception of a gesture, even if it does not have a visual or performative value, the boundary conditions for the existence of, for example, an audiovisual contract, which is primarily to ensure the comfort of the recipient, necessary for the development of added value, must first be met. Providing comfort can increase the impact of the gesture[349], its credibility, the power of persuasion, and enable the perception and feeling of absolutely universal (abstract) or absolutely concrete impressions, including those ephemeral, unnamed or unnameable, and what is more, it can also, on the contrary, weaken or thwart them. Each recipient has a different level of openness, which is necessary in this respect, so this is a highly individualized aspect, although there is always a margin for the occurrence of the general impact of the gesture. Zielińska points to the following conditions of this type[350]:

(1) Uninterrupted data transmission;

(2) Comfortable reception conditions;

(3) Formal provision of time for resynthesis and for the crystalisation of added value;

(4) The highest possible technical quality of the message;

(5) Referring to the recipient's long-term memory: their life experiences, dreams, cultural emblems, beliefs, knowledge[351];

(6) The ability to persuade the recipient to empathize.

Due to the above-mentioned, constantly subconsciously performed by the recipient test of similarities and differences, a number of psychophysical reactions may be produced, with tension and relaxation at the forefront. These categories are quite relevant for recognizing the nature of gestures. In the colloquial understanding, such tension generated in the listener can also be found in contextual tensions (here resulting in particular from

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[349] In this situation, the small, inconspicuous sources of these gestures cannot be ignored. This is well illustrated by the situation with Zielińska's *Sinfonia concertante* for small sound objects, small percussion and a large symphony orchestra, in a note to which the composer indicated that she was looking for the possibility of expressing "powerful" in the psychophysical sense, but also their rank in the piece of gestures using modest means, in including using "waste": mess tins, empty bottles, egg cutters, etc. *Cf.* [Rozmowa z Lidią Zielińską, Program 2 Polskiego Radia, 18.09.2015 w antrakcie Koncertu Inauguracyjnego 58. Międzynarodowego Festiwalu Muzyki Współczesnej Warszawska Jesień] *Sztuka słuchania* [source:]
https://www.polskieradio.pl/8/192/Artykul/1506861,58-Warszawska-Jesien-w-Dwojce-Sztuka-sluchania [accesed: 01.05.2023]; *Cf.* L. Zielińska, [Notka o utworze] *Sinfonia concertante, [in:] Książeczka programowa 58. Międzynarodowego Festiwalu Muzyki Współczesnej Warszawska Jesień*, Warszawa, 2015.
[350] These conditions are, in fact, very close to the assumptions of, for example, Lutosławski's psychological form. L. Zielińska, *Kontrakt audiowizualny*, *op. cit.*, p. 234.
[351] A special form of long-term memory is musical knowledge and skills, but also intuition. Paweł Szymański writes about this in the context of musical puzzles posed to the listener with his unconventional pieces: "[...] You have to give the potential listener a chance to guess this subtext (whether he guesses – and whether he should guess – correctly is a different problem).". P. Szymański, *Autorefleksja*, [in:] L. Polony (ed.), *Przemiany techniki dźwiękowej, stylu i estetyki w polskiej muzyce lat 70.*, Kraków, 1986, p. 297. [translation after Szymański done by myself].

Peirce's three types of distinguishing signs or understanding things): (1) between a gesture and its sound effect (movement and its effect or lack of effect), (2) between a gesture and its meaning, (3) between a gesture and its image (actual and imaginary), etc. Playing with these tensions, built "polyphonically" on several media layers, makes it possible to invent new formal solutions, e.g. placing nodal points of given media in such culminations in completely unusual places. Therefore, the culmination will not have to be understood as the highest dynamic and expressive point, but rather as the point of peak intensity of the trajectory of the adopted actual means, e.g. audial, but also virtual.

This sense of tension, as well as another phenomenon mentioned above, which is the problem of "teaching" the viewer material, the problem of memory, making "promises" and fulfilling them through the structure of a work of art, the test of similarities and differences, or the added value discussed in the context of audio-vision, can be explained from a different, Brunerian perspective of effective astonishment, reconciling cognitive issues with those culturally (sign-based) ones. The role and significance of this concept in Polish musical epistemology was pointed out by Marcin Strzelecki.

> "The road to banality is paved with creative intentions. Surprise is not easily defined. It is the unexpected that strikes one with wonder or astonishment. What is curious about effective surprise is that it need not be rare or infrequent or bizarre and is often none of these things. Effective surprises (…) seem rather to have the quality of obviousness about them when they occur, producing a shock of recognition following which there is no longer astonishment."[352]

Elsewhere, Jerome Symour Bruner points out that the act that evokes effective surprises is the hallmark of a creative enterprise[353], the point at which the production of novelty takes place.

The effectiveness of surprise stems from three areas that can be realized in musical means by placing objects in new, hitherto unknown contexts, going beyond the usual ways of experiencing the world, and suggesting "a new instrument for manipulating the world[354]": [355]

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[352] J. Bruner, *O poznawaniu. Szkice na lewą rękę*, transl. E. Karasińska, Warszawa, 1971, p. 36. [Translation after text of M. Popova]
[353] *Cf. Ibid.,* p. 35.
[354] *Ibid.*, p. 36 and next. [Translation after text of M. Popova]
[355] M. Popova, *Pioneering Psychologist Jerome Bruner on the 6 Pllars of Creativity and How to Master the Art of "Effective Surprise"*, [in:] *The Marginalian*. 21.04.2014. [source:] https://www.themarginalian.org/2014/04/21/jerome-bruner-on-knowing-left-hand-creativity/ [accesed: 01.05.2023].

(1) Prediction effectiveness: the kind of surprise that gives the possibility of continuation (both with a sudden and a slow increase in knowledge and expectations);

(2) Formal (iconic) effectiveness: the surprise of a sudden illumination (the moment of *εὑρήκαμεν* [*heurēkamen*]), which reveals an unexpected connection between known, but hitherto perceived separately or even alien phenomena. Rather, it deals with the domains of sensory, physical, and psychic experience;

(3) Metaphorical effectiveness: astonishment resulting from an unexpected connection between familiar but hitherto perceived separate or even alien experiences. Rather, it concerns cultural, thought, abstract domains.

The conditions of an audiovisual contract are basically the conditions for the correct performance of a musical work, and thus for ensuring the legibility of gestures in the simplest sense: uninterrupted data transmission, the highest technical level in concert conditions. It is not so much a flawless performance of the work, as some errors do not affect the reception of the gestures as a whole, but the ability to reconstruct the gestures from the score and **to outline them flawlessly in** order to build the correct atmosphere of the work's reception. For this reason, it is very important for the composer to shape the audiosphere of the work in such a way as to "tune" the listener's ear to the "detail" as much as it is possible.

For this reason, in *visibilium et Invisibilium* I decided to introduce drones looped endlessly, lasting before and after the piece starts and ends, which, as I have already mentioned, introduce an atmosphere of listening and observing, and open up to a certain idea of the emergence and turning of the work as a whole into infinity. A number of conditions were also imposed on the composer: planning the structure in such a way as to anticipate the need for rest, the need for change, the need for a specific purposefulness, i.e. the fulfilment or non-fulfilment of promises and the associated structures of tension and relaxation.

Due to the adoption of various types of gestures on different levels and referring to different provenance of the audience (who are at this type of concert for the first time, persistent melomans, colleagues from the community, i.e. professionals, etc.), the framework of the piece was constructed in such a way as to invite to a "polyphony of thoughts and impressions" and, in my opinion, to provide space for an engaged reception. The intensification and dilution of musical actions in appropriate proportions, resulting in tension and relaxation respectively, the separation of the sound and visual climaxes [V, from m. 256] from the semantic climax [VI, m. 409], the variety of juxtapositions of the layer of non-musical stimuli (video-playback, dance, visuality and spatiality of ensembles) are the main tools in the creation of the piece.

The tension generated in the first movement by visualisations of whip (frusta) strokes increasingly slowed down and stretched in time, and juxtaposed contrapunntally with the increasingly intensified, accelerated sound action and the proper sound emerging on the basis of Smalley's nomenclature [I, e.g. mm. 59-73] of noise [I, mm. 4-33] and arrows [I, mm. 34-58] increases. At the climax of this movement, the appearance of a very slow visualization of a sound wave coming out of the whip (frusta) and bouncing off the floor and walls thanks to the capabilities *of Schlieren Optics* is juxtaposed with a finally appearing crystallized harmonic series and liturgical bells, reinforcing the cultural reflex of conviction about the importance of this moment, its metaphysical character, which in the general perspective gives the impression of an audio layer with great intensity of movement [I, mm. 136-141]. The tension generated between the visual gesture and the other gestures, their contexts and meanings, is very high, although, I hope, sufficiently prepared by a long-term introductory process.

3.2.5. Expressively focused communication

"According to Marshal McLuhan, the nature of the medium used to transmit a message is of greater importance than the message's meaning or content. Our world is **not just how** we perceive it, **it is precisely this: how** we perceive it."[356]

Just as in the visual arts the watching "I" and "you" have begun to be taken into account, and in the setting (bacdrop, universe, represented world, reality, „świat przedstawiony") in literature[357] the "speaking self" (narrator) is described, so it would be, I think, necessary to begin to include in the setting (bacdrop, universe, „świat przedstawiony") of a musical work the listening "I" and "you"[358] as a musical parallel, e.g. the concept of a preposterous reading of the art of Mieke Bal. The perspective of watching (listening), which enables an accurate reading of the message (the context of the message), is at the same

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[356] K. Lang, *Linea mundi* [notka o utworze], [source:] https://www.soundohm.com/product/linea-mundi-lp [accesed: 01.05.2023]. *Cf.* „Our perception of the world is filtered, even created by the transmission channels: a very large part of what we see and what we listen to is not simply reproduced, but elaborated and recreated by an electronic tool which redefines the nature of message and is superimposed on his concrete experience by replacing it. Therefore, if "the medium is the message", the characteristics inherent in the message are less important than those of the channel, just as the technology that allows the transmission, electronic processing and distortion of this message becomes the real object of the communication. The permanence of the real thus gives way to a continuous process of sampling, filtration, transformation and distortion. The transmission channels tend to dematerialize the various and innumerable phenomena that make up reality and to dissolve them in an electronic and hypnotic continuum." F. Romitelli, *Note de programme de « Audiodrome - Dead City Radio »*, 2003 [source:] https://brahms.ircam.fr/fr/works/work/14257/ [accesed: 01.05.2023]. [translation after Romitelli done by myself].
[357] The popularization of the concept of constructing a represented world is unanimously attributed to Ingarden.
[358] M. Bal, *Czytanie sztuki?*, [in:] *Teksty Drugie: teoria literatury, krytyka, interpretacja*, no 1/2 (133-134), 2012, p. 41.

time the perspective of describing the setting (bacdrop, universe, „świat przedstawiony")[359]. A gesture necessarily presupposes the existence of some form of "you," even if that "you" is a computer processing strings of numbers.

> "The interest in the form of 'you' has intensified in philosophy and literature as a result of the exhaustion of reflections on the 'he' and the 'I' turned towards the objective world and towards the subject itself. Both discourses are only just discovering the potential that lies in the form of the "you" that enables new ways of representing the experience of the "me". The second-person narrative, despite the fact that it is almost a hundred years old, has not received a wide bibliography in Poland. What do we know about it? It is connected with the first-person narration, and the character, whom the narrator describes as "you" (the addressee of the statement), is usually one of the protagonists of the work, often the main character. The second-person narrative makes it possible to speak not only about the 'you' but also about the 'I'."[360]

Establishing a message, the content of a gesture is possible due to its direction, i.e. either it will be an internal, introverted gesture, i.e. communication towards oneself, or an external, extroverted gesture, i.e. communication towards the recipient[361]. Therefore, not all creative procedures have to be understood. A work of art is customarily treated as an abstract and general entity. However, there are known cases when it can be an individual and concrete work, or it can be individualized and concrete-oriented in certain aspects. The recipients of certain layers of communication in the musical works are sometimes known by name and surname, i.e. listening 'yous': e.g. Cardinal Ascanio Sforza in arrears with payments to Josquin des Pres, as a result of which the famous madrigal *In Te Domine, spaeravi* was created, or Henryk Mikołaj Górecki sacralizes and metaphysically invokes his own mother, Otylia, in *Ad Matrem* (though it could just as easily be any mother, or Our Lady, or all of these possibilities at the same time). There is a well-known quote by Lutosławski, which I believe reveals the intention of appointing a whole group of listening "yous": "My efforts are not aimed at winning over as many listeners and supporters as possible. I do not want to atone back, but I want to find. Those who in the deepest layers of the soul feel the

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[359] Assuming the relation-based orientation of the musical work, distinguishing or rather revealing the listening "I" as the equivalent of the narrator, sometimes the structure of (self-)expression of the creator, and sometimes also the performer, listening "you" as the recipient, the temporal and spatial structure, would perhaps allow for some form of parallelism for musical works in relation to diegesis in audiovision or the represented world in prose. It is impossible not to notice that the attitude towards gestures is most often determined by the simultaneous attitude towards the diegetic function of music. This sometimes creates the impression of a paradox: on the one hand, Grażyna Bacewicz and Witold Lutosławski claim that music does not express any feelings or "tell anything" except itself and its emotions, and on the other hand, they build parallels to theater narrative (Lutosławski's *String Quartet*, *Concerto* for cello and orchestra), etc., not to mention quite rare examples of obvious (self-)expression by both artists (self-pastiches by Bacewicz, as well as her clearly gestural radio opera *Przygoda Króla Artura*).

[360] I. Siwak, *O filozoficzno-literackiej „twórczości dwuręcznej". Przypadek Dobrosława Kota*, [in:] *Ruch literacki*, r. LXII, z. 5, 2021, s. 683. [translation after Siwak done by myself].

[361] *Cf.* Theory of intensive and extensive semantics of expressiveness, including self-expression. K. Moraczewski, *Sztuka muzyczna…, op. cit.*, p. 125 and next.

same as I do."[362] In the end, it may be the case that the composer's finger does not point to any listening "you", and the message hidden in the work, so to speak, "goes into the ether", as in Renaissance music, where there is no uniform overall score available only in the case of partbooks. This made it almost impossible, or at least very difficult, to get to know the piece, and meant that potentially the only recipient of numerical, proportional and many other orders, even visual or symbolic, could ultimately be the composer himself and God himself: not the performer, not the listener[363]. Perhaps it is obvious that the work of art as a multifaceted phenomenon is knowable in different ways and from different perspectives. These perspectives reveal the nature of the gesture.

A gesture can be self-expressive when the choice of understanding, the shaping of gestures, the establishment of grammar communicates, explicates views, and externalizes the inner truth of the creator. At the same time, the recipient is the bonding platform. By taking into account the grammars of the listeners in the construction of compositional grammars, one can easily avoid artificiality and achieve the impression of naturalness, the experience of the authenticity of human expression in a gesture that conveys pure energy, as it were.

For this reason, minimalist styles (Górecki would say: maximalist) or reductionist styles are justified as gestural styles, because extreme reductionism, both in terms of form and technique, makes it possible to visualize the gesture, and the sensitive, concentrated "ear" of the listener to be directed directly to an interesting gesture, transformed even to the slightest extent, and to the observation of one's own psychophysical reactions to it. As Wielecki says: " The most important things usually speak in a whisper".[364] It can be said that the more technically limited a gesture is, the more radical and introverted it is (although, of course, provided that the work's grammar system is constructed in a coherent way). This is probably the reason for the intuitive direction of artists associated with relational music in the directions set by Henryk Mikołaj Górecki, Arvo Pärt, Steve Reich, Terry Riley, Tomasz Sikorski, Galina Ustwolska, or their successors, including the aforementioned Klaus Lang and many others, i.e. towards the search for radical, unadulterated clarity of expression. This will be well demonstrated by the analysis expressed in the next chapter.

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[362] T. Kaczyński, *Zeszyt myśli W. Lutosławskiego*, [in:] J. Astriab, M. Jabłoński, J. Stęszewski (ed.), *Witold Lutosławski – Człowiek i dzieło w perspektywie kultury muzycznej XX wieku*, Poznań, 1999, p. 247. [translation after Lutosławski done by myself].
[363] This state of affairs obviously changed with the beginning of notating early music (e.g. Palestrinas music) in the form of contemporary scores (staff notation).
[364] A. Mądro, *op. cit.*, p. 99.

The thought I will describe in a moment has been guiding my compositional work for some time. It can be said that it has evolved from multi-layered polyphonic systems (horizontal, easier to follow "processually", more difficult to follow "event-wise") to "homophonic" in the gestural sense (vertical systems), although I do not think that this should automatically entail a stylistic assignment to minimalism or constructivist reductionism. I'm interested in the process to which I subordinate all gestures and their components at all levels of hierarchy in my composition, although the detail still remains important. What fascinates me the most about the process are situations of repetition and differences.

In order to direct the recipients sensitivity to the gesture, its "contour" and the tracing of the contexts of its appearance, I think primarily in terms of spectromorphological categories of gesture and texture as figure and background. For this reason, the score may visually look not so complicated (with the possible exception of fragments where there are more procesual and dedicated to gesture transformations), because it is primarily used to emphasize gestures, and the reduction and legibility of the layers make all higher-level processes appropriately distinguished. The latter applies in particular to quoting, or rather referencing, as an opening of the represented reality in *visibilium et invisibilium* to the realities represented by other works of art, which create a network of mutual translations and contexts.

Despite this reduction visible in the score, it does not compromise the complexity of timbres, textural complexes, relations between layers, and the juxtaposition with other media (the part of an amateurs ensemble, light, dance, audio-playback, video-playback) as mutual counterpoints sufficiently complicates the reception as a form of a multi-layered image. Reduction is my conscious choice, and the complication is transferred to a different level of perception of the listener than a kind of tracking of sounds. Here I return to Ingarden's statement, who explicated that looking at the score itself does not prove the value of the musical work, because the score itself does not encompass the entirety of the ontological entity that is the work.

In *visibilium et invisbilium*, the diversity of the listening "yous" was assumed and an attempt was made to provide each of them space, i.e. the possibility of effective surprise at different levels of accessibility. However, I believe that the most important content, i.e. the culmination of meaning, is spoken literally in a whisper, through the mouths of musicians whispering words with metaphysical eyes taken from *the Bhagavadgītā*.

3.3. Extracting and grouping musical gestures

3.3.1. Generative approach

I think that musical generativism can be discussed in two modes: broad and strict. The first exists when the creator builds his artistic statement on the basis of both speculative and arbitrary rules, inherent only in his own, not necessarily conscious will. This set of accepted rules can be referred to as grammar, an actualization of what is generatively possible. Every generative order is at the same time transformative: thanks to the power of transfiguration, an infinity of grammar is possible, because transformation allows for the further creation of an infinite number of potentially infinitely long expressions, in the case of music, sound structures, and in the case of this dissertation, musical gestures. Bielawski confirms this intuition by recognizing the process of generation as one of the forms of transformation by transferring to another space dimention. Therefore, it is important to distinguish between generativism[365] and the generation process[366].

Thus, in order to produce a sound gesture composed hierarchically of lower-order gestures, it is assembled in a transformative way. In my opinion, the dependence of generativism on transformativeness is consistent with a natural human trait, namely that apart from thought, man is not able to create anything, but only processes (spatially) the reality that surrounds him[367].

According to Chomsky's intuition, then, it is about a "tug-of-war" or form of controlling the tension between generation and transformation, competence and efficiency, abstract knowledge, i.e. the determination of a rule-based system and the use of this knowledge in any situation, i.e. production and reception[368]. In this game of tensions, the aforementioned Cox tips the scales in favor of focusing on the unique features of musical works, rather than in favor of a homogeneous system that makes these works unique.[369]

First of all, then, grammar is generated, the complementary, internal world of the means of a given particular work: its procedures, scripts, codes of conduct of the composer, in a word, his rules of technical conduct. In this respect, the work of art somewhat resembles

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[365] "1. 'Related to generative reproduction'
2. 'related to generative grammar'" [entry:] *generatywny*, [in:] *Słownik Języka Polskiego PWM* [source:] https://sjp.pwn.pl/slowniki/generatywny.html [Accessed: 01.05.2023]. [translation after Encyclopedia done by myself].
[366] "The process of converting various forms of energy into vibrational energy" [entry] *generatywność*, [in:] *Słownik Języka Polskiego PWM* [source:] https://sjp.pwn.pl/sjp/generacja;2461208.html [Accessed: 01.05.2023]. [translation after Encyclopedia done by myself].
[367] *Cf.* L. Bielawski, *op. cit.*, p. 176.
[368] N. Cook, *op. cit.*, p. 242.
[369] F. Cox, *op. cit.*

normative structures: general and abstract linguistic expressions that have no logical value, but have their addressee, the scope of application, i.e. the circumstances of application, and the scope of norming, i.e. the indicated model of behaviour[370]. Steven Feld writes about it:

> "If we treat music as a field of cultural knowledge and use the linguistic concept of generative description, then ethnomusicological explanation can be defined as theories about things that people need to know in order to understand, perform and create music acceptable in their cultures. Such a theory, like linguistic theory and ethnoscientific anthropological theory, aims to uncover the hidden rules that underlie the systemic behavior we call music."[371]

The rules of meaning ("interpretant"), transforming a linguistic expression (a thought, concept, an idea) into a work of art, are rooted in the composer's will[372]. Therefore, the reconstruction of the grammatical rules set for a given work is a form of the "skeleton" of the work understood in the Griseyan sense (as opposed to "flesh", corresponding to transformativeness, and "skin", corresponding to sensory experiences[373]).

At the same time, as the authors of *GTTM point out*, compositional grammar is the obverse of the reverse, the grammar of listening, due to its nativeness, competence accessibility and universality, which in turn are accessible to every human being. By the way, it should be noted that personally, as I have written several times, I also add here performance grammars, analyses-interpretation grammars, notation grammars, etc. Compositional grammar is subject to the rules of psychoacoustics and cognitive science, including the special kind of experience of embodied cognition or effective surprise. Knowledge of these patterns enriches the awareness of the use of means in compositional grammar, which is justified by all recognized systems, such as the tonal system, where the primacy of major chords is derived from acoustics, then minor chords (harmonic spectres and Rameau's theory of the inverted harmonic spectre), always major dominant seventh chords, the rules of doubling factors (root notes and fifths), the Root position as the basic form of the chord (the others, especially the first and third inversions are his weakening prefigurations), way of voicing placements (close, open), tonal gravity, dissonance and

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[370] However, I think this similarity is only illusory, because the art of composition requires the ability to "play" on similarities and differences, stable elements (norms) and unstable elements (deviations). Therefore, the expressions that make up the grammar should not have a directival form, since the idea is to use procedures, but also to break them, if that is the composer's will.
[371] S. Feld, *Linguistic models in ethnomusicology*, [in:] *Ethnomusicology*, t. 18, p. 210. [after:] S. Żerańska-Kominek, *Muzyka w kulturze*, Warszawa, 1995, p. 167. [translation after Żerańska-Kominek done by myself].
[372] In addition, applicable in accordance with the thetical, axiological and behavioral justifications. *Cf.* S. Wronkowska, *Podstawowe pojęcia prawoznawstwa*, Poznań, 2005, pp.11-17.
[373] *Cf.* G. Grisey, *Tempus ex machina…, op. cit.*

consonance (beats in Helmholz's approach, as proposed by Guczalski[374]), stability and instability (perfect cadence as opposed to deceptive cadences or progressions in type of II-V-I or ellipsis), etc.

Finally, grammar also establishes the rules of the relation between the surface layer, i.e. the representation of a sentence, and the deep layer, i.e. the content in a work. Generativism is actually the second step in building the sound system of a piece, which, while establishing or refining grammatical rules, can take place both at the stage of precomposition, the composition itself, and sometimes even later. Generativism sets the rules for transformation and directs the perceptual areas that will be used. Generativism ensures the explicitness of the system: the clearer the grammatical rules, the more comfortable the recipient is potentially[375] and the stronger the gestures and their contexts, as well as the easier it is to carry out the processes of naturalization and enculturation in the long term, which is perhaps the reason for the success of the tonal system [376]. Generativism serves to express conceptualization (including through gesture) by establishing its rules. Generativism provides a hierarchy of gestures: lower-order gestures create higher-order gestures[377].

However, the rules of meaning cannot be imposed unilaterally, because all other grammars exchanged, constituting the obverse or reverse of the same grammar of listening, will also be determined. Because of the theory of embodied cognition, even abstraction can find its accidental reference in one's individual experience. This is evidenced by the fact that, for some reason, the dominant-tonic succession is commonly perceived as tension-relaxation, and the introduction of a subdominant and dominant in relation to the tonic is perceived as centrifugal and centripetal gravity. Similarly, what seems perceptually abstract

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[374] *Cf.* K. Guczalski, *Harmonia nie tkwi w liczbach. O pitagorejczykach, strojach i zgodnych współbrzmieniach*, [in:] *Scontri*, no 2, 2015, pp. 77 and next.

[375] Meyer writes about this in the chapter on hierarchical structuring in a musical work. *Cf.* L. B. Meyer, *Explaining music. Essays and Explorations*, Berkeley, Los Angeles, Londyn, 1973, pp. 80 and next. Complex worlds without hierarchy escape the possibilities of observation and understanding, exceeding the possibilities of memory and prediction. That is why they are, as Skórzyńska writes, a flat ontology. Meyer proposes that hierarchy be built on "closures" of structures as the most susceptible to perception and isolation. Meyer's theory is one of the basis for my proposal of a strephical approach to gesture.

[376] On the contrary, twelve tone music, especially serialism, despite its outstanding systemic explicitness, did not provide the required comfort to the recipients. Of course, you can find exceptions, as in the post-romantic dramaturgy of Alban Berg. At the same time, the uniquely surconventional and intertextual form of the *Violin Concerto in Memory of an Angel* is, like Brahms' *Symphony no. 4*, proof that ideas do not arise in a vacuum and constantly return. However, this confirms the thesis about the need to take into account listening grammar. By maintaining it, the listener can understand something he has never heard only because the grammatical rules will be universal, available to every person by birth and will not require an interpretation process resulting from knowledge, enculturation, etc.), but simply encourage listening.

[377] Due to the presence of rules of meaning, expressed, among others, in the hierarchical structure, as well as due to the hypothesis about the straphical structure of the gesture and pre-cultural, reductive forms of gesture, it should be noted that a musical gesture cannot constitute the so-called "flat ontology", i.e. one according to which the reality of entities or objects (abstract or concrete) cannot be arranged hierarchically. *Cf.* A. Skórzyńska, *op. cit.*, p. 170.

could often be assigned to the mimetic (semiotic) mode in the composer's intention. Conversely, there may be a process of finding meaning in abstractly intended elements.

Speaking of generativism, it is impossible not to mention generative music (often called algorithmic) music in its strict, proper sense[378]. As quoted by Strzelecki Philip Galanter indicates: "Generative art refers to any art practice where the artist uses a system, such as a set of natural language rules, a computer program, a machine, or other procedural invention, which is set into motion with some degree of autonomy contributing to or resulting in a completed work of art."[379]. Drawing a distinction between subjectivity expressed in the creative will of the composer, and objectivity with its exposed role of procedure, Strzelecki simultaneously distinguishes three types of the result of generative actions: (1) procedural, where the sound result is secondary to the procedure; (2) perceptually ordered, where the sound result is aligned with the implied intent; (3) unambiguous, where the procedure is oriented towards achieving a very specific, calibrated sound result[380]. At the heart of this understanding is the intention, the awareness of creative action and control over its effect. The specification of this strict understanding is determined by the special role of the computer or calculations, so it applies to such concepts as *HCI sonification*, *CAC* or stochastic music.

3.3.2. Transformative approach

The intuition that the special feature of gestures is transubstantiation, translation, or transfiguration is followed by numerous theories by authors as important as Helmholz, who claim that the form of parallel, the explanation between the system of musical modi (scales) and the system of space (dimensions) is the comparison of modulation in harmony to the topophonic transition of sound in space[381]. Flusser's thought, expressed in the recently popular book *Gesten: Versuch einer Phänomenologie*[382], belongs to this circle.[383] The most important in the context of this dissertation seems to me to be the philosopher's remark about

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[378] *Cf.* e.g. G. Nierhaus, *Algorithmic Composition. Paradigms of Automated Music Generation*, Wiedeń, Nowy Jork, 2009; G. Nierhaus (ed.), *Patterns of Intuition. Musical Creativity in the Light of Algorithmic Composition*, Dordrecht, 2015.

[379] M. Strzelecki, *Generatywność w muzyce. Zarys problematyki, konteksty kulturowe i perspektywy* (wykład), Instytut Muzykologii, UAM, 24.05.2023. Quot after: P. Galanter, *What is Generative Art? Complexity Theory as Context for Art Theory* [in:] *GA2003 6th Generative Art Conference*, 2003, p. 4. Polish Translation of quote: M. Strzelecki.

[380] *Ibid.*

[381] H. von Helmholtz, *On Sensations of Tone as a Physiological Basis for the Theory of Music*, transl. A. J. Ellis, Londyn, Nowy Jork, 1895, pp. 371 and next.

[382] Fragments of the above-mentioned Polish translation of publication can be found in the: V. Flusser, *Kultura pisma. Z filozofii słowa i obrazu*, transl. P. Wiatr, Warszawa, 2018. Mazzola refers to Flusser's views as important for his own concept, although he uses them as a basis for reflection of a mathematical (formalist) rather than idealistic nature. G. Mazzola (ed.), *op. cit.*, p. 848 and next.

[383] V. Flusser, *Gestures*, transl. N. A. Roth, Londyn, 2014.

"coherence" (*Stimmigkeit, coincidence*), which is ensured in the process of arbitrary transformation of the **atmosphere** (this is another key word) of both emotions or states of mind through the use of gestures. Flusser himself sees the very way how gestures work at the level of cognition in the same way as ideas appear in Plato's cave: as blurred shapes, shadows cast on the wall by light (*The Gesture of Filming*). Flusser's various gestures are ontological (phenomenological) in nature. Hence, the cognition and understanding of gestures takes place through the study of their use, context and function, repetition and difference, because the ever-transforming reality (the actualization of generative possibility) results in **the transformative** power of gesture to create and assign meaning.

Individual chapters of the above-mentioned book are basically essays about the phenomena of various types of gesture reduced to the level of deep metaphors, m.in. writing, speaking, making, loving, destroying, painting, Photographing and Filming. Interestingly, there are no musical gestures here, apart from the gesture of listening to music. According to Flusser, the phenomenon of gestures lies in the fact that at a certain stage of civilizational development, humans need **to extent** (prolonge, which is another key word in this context) their body gestures with gestures of a different nature, which are, as it were, multimedia "prostheses", evolutionarily developed organs of communication. This statement, combined with the philosopher's lack of distinction between musical gestures, means that Flusser's beliefs would justify the phenomenon of relational music, which was created along with the digital revolution. In another of his essays*, The Art and Therapy,* philosopher writes: "So this kind of information is not stored, the information flows in the memory, and the information knots that they are are unraveled, and they themselves begin to fall apart. They are no longer designed to communicate, but by communication."[384]

3.3.2.1. Intra-systemic and extra-systemic transformation. Semiosis. Surrogacy

According to the generative theory of grammar, the closest understanding of translation is read as the transformation of the input data into the output data by the interpreter according to the adopted grammar. This definition thus corresponds to Peirce's semiotic triad. Modulation is the reverse of the obverse, which is the generation process. It can be understood as a transformation from one to another, the generation of X from the motion Y, but also in musical sense: modulation, variation, and replication.

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[384] Moreover, this fits into the shift of the message in favor of communication itself, which has already been mentioned several times (Lang, Romitelli, Lehmann). V. Flusser, *Kultura pisma..., op. cit.*, p. 295. [english translation after Wiatar done by myself]

Musical gestures, understood in various ways in terms of different systems of signs, therefore require the assumption of the necessity of intersemiotic translation. It is a difficult transcreation between radically different semiotic systems, such as Bielawski's spaces, e.g. the transfer of the audial space to the Euclidean space[385], or Michał Janocha's the pitch dimension transferred to the spatial dimension. Its difficulty stems from the self-limiting property of the structure of systems, which Janocha described as a mathematically understood feature of the dimensional collapse in another dimension[386].

It is therefore difficult to say, for example, in the case of translating *the glissando* gesture determined by pitches, duration, and timbre into a spatial dimension with a determined displacement vector, duration, and timbre in relation to the relational level of audial space present in both cases. It is necessary to refer here to various levels to which spatiality is related, such as the description of the quality and direction of sound motion (various types of morphologies, including temporal structuring, which is much more complex than the mere determination of the duration of the phenomenon), the quality of spatial location (topophonies), but also the reference to pitch, ambitus "space" (spectral space and spectral density in Smalley's nomenclature), which in this way "self-limit", if one need to include all or most of them in both character systems.

The above-mentioned example was described by Janocha along with the hypothesis that in order to maintain the perceptual possibility of "identifying" the gesture in transitions in both systems of signs, it is necessary to maintain at least two common dimensions, two levels of gesture[387]. A similar hypothesis is formulated by Queiroz and Aguiar on the basis of Campos' writings explaining intersemiotic translation, namely that the preservation of iconicity in both systems of signs is a condition of intersemiotic translation with collapsed layers, and at the same time it is a condition for translating any other, so consequently the choice of translated layers is ultimately an expression of sensitivity, a careful reading of the translator[388]. In a way, this fulfills Flusser's *Stimmigkeit* postulate. In transcreation within the framework of intersemiotic translation, it is therefore necessary to select carefully researched and selected layers from the source, and in accordance with the goal, to translate them into new means and processes in the target system, on the basis of a subjective "cross-domain mapping" between different systems and levels.

This problem manifests itself especially when it comes to maintaining the perceptual recognizability of the gesture with further deviations of Peirce's infinite spiral of semiosis (or

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[385] L. Bielawski, *op. cit.*, pp. 168-170.
[386] M. Janocha, *Współczesne systemy wielokanałowej projekcji dźwięku*, Poznań, 2019, p. 20, [not yet published].
[387] M. Janocha, *op. cit.*, pp. 25-26.
[388] *Cf.* J. Queiroz, D. Aguiar, *op. cit.*, p. 202.

surrogacy, gesture substitution according to Smalley), i.e. the distancing of signs from the original signified object.

Starting from the idea of visually revealing a sound wave in the *Schlieren* apparatus , I began to treat it as the most basic gesture in the piece. In order to achieve the effect described in this way, it was necessary to use a very loud instrument (here the choice fell on a whip - frusta) and a camera capable of recording about 10,000 frames per second, on which about 10 frames showing the moment of the visual sound wave was recorded. However, the whip (frusta) strike itself did not seem to me to coincide with the goals of the piece. Of course, I use this type of gesture – aggregate-impulse-strike – very often, but subjectively I lacked a certain individuality in it, above all the construction of the swing phase component and the aggressive strike component, and the lack of space to create contexts. Therefore, I decided to transform the gesture and look for a new metaphorical form that would be, at least on a symbolic level, legible and open to interpretation.

To this end, I decided to objectify the gesture of whip-frusta strike. It consists of three distinct phases: preparatory (swing, slower, accumulating opening of the whip-frusta flaps, energetic deflection and faster, more intense approach in order to generate sound from the movement of the hand, which in total makes up a phase that is basically soundless), proper (contact of the flaps, generation of a dry, very loud, selective sound), final (depending on the performer's reflex or holding the "closed" instrument, or a slight reflection, which makes up the character of the resonance, the discharge of energy). The key element is the moment of sound generation through changes in the interface of the instrument, i.e. the conversion of the energy of the hands into sound. Visually, it is at the moment when the flaps of the instrument come into contact that visible arcs of sound waves are emitted, which, having bounced off the adjacent surfaces (walls, floor) at great speed, return towards the instrument. In the preparatory phase, only changes in air density (pressure) are visually visible, while only in the actual and final phases sound waves are visible: in the actual phase as excitation, and in the final phase as reflection (decay). These observations encouraged me to look for three-phase gestures with a clearly accentuated preparatory stage, a form of spectacular state change in the proper phase and a gradual lapse in the final phase.

My attention was also drawn to another gesture, also visually possible to capture in the apparatus, i.e. the gesture of friction of matches (the preparer phase – friction tests, the actual phase – the flash of light, the final phase – depending on whether the flame goes out immediately or not – the duration of the lit light or its extinction, and additionally revealed by the *Schlieren* apparatus associated pressure changes, visible in the form of "clouds"). This gesture was iconically equivalent to the gesture of whip-frusta strkie: it preserved its phases, the formation of energy, its intent, and its apparent change of state. It was also iconically

even richer, because it generated a more diverse range of sounds appropriate for each of the phases, and at the same time metaphorically created a much wider field for shaping meanings (the symbolism of light, the symbolism of whether or not it comes true, the symbolism of attempts to perform an act, the symbolism of onset-continuant-termination, birth-continuance-death, etc.), especially in the context of the essence of *the Schlieren* apparatus, which visually reveals changes in air density. I've been fascinated by this technology since 2019, I've composed a few pieces loosely related to *Schlieren Optics*, but this was the first time when I was able to work with it and specified detailed solutions for a piece, not based solely on materials found indirectly.

The use of *Schlieren Optics* to acquire the image has also generated some interesting contexts of its own: the round shape of the lens, the color of the imaging and others are reminiscent of the shining moon, whose cycles and phases traditionally symbolize birth-life-death, which has two sides: dark, invisible, in some beliefs considered to be the dwelling place of invisible souls, and bright, visible, etc. Sometimes the viewfinder of the camera would grab the lens, which resembled the process of looking through a microscope, a metaphysical Judas-hole through which and in which one can trace hidden life. At the same time, the image here is clearly naturalistic, organic. The above-mentioned contexts also strengthened the assumptions made for the work and required only a conceptual embedding in a broader whole.

3.3.2.2. The process of generation and modulation – Ludwik Bielawski's approach (spatial)

According to Bielawski, transformation is a fundamental problem for the phenomenon of gesture. It is the transfer of movement to another space by means of a transformer, which can be a musical instrument. A form of transformation is the generation or modulation of movement in the case of a performative gesture of the performer, which on the one hand consists of mechanical movement causing changes in the interface of the instrument[389], and on the other hand, an element of this movement that carries its meaning and non-physical meaning[390]. Bielawski indicates the general transformational model in the graph below:

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[389] This is where the problem of descriptivism manifests itself: the types of sounds generated derive their names from motor gestures (blowing, plucking, hitting, rubbing). More on this topic: E. Schreiber, *Muzyka wobec doświadczeń przestrzeni i ruchu, op. cit.,* pp. 103-117. Also: E. Schreiber, *Muzyka i metafora…, op. cit.*, p. 126-150.
[390] This phenomenon is considered from the perspective of various scientific disciplines: psychology, physiology and performing technique, organology and physics-acoustics.

Features of motor Gestures	Features of Music Gestures
Temporal	Temporal
Spatial	Pitch
	Timbre
Dynamic (force)	Dynamic (sound loudness, intensity)

Figure. 30. A general model of transformation of the features of motor gestures into the features of musical gestures according to Bielawski[391].

The process of generation, understood in terms of dictionary and at the same time closer to Bielawski's understanding, is the creation of a new type of movement (motion) through the transformation of the source movement (motion), e.g. motion of thoughts, ideas, concepts into a sound structure, and thus it is an external, extrasystemic transformation, a semiosis between various semiotic systems. Moving away from the source (original signified object) in semiosis will have the effect that the further it goes, the less it will contain elements of common systems. The process of generation can take place both in general as a *quasi-primary* separation of a musical gesture, including gestures understood pragmatically as abstract or presemiotic, or as a transformation of an object in the primordial irreducible triad of Peirce's infinite semiosis. The process of generation can also take place in the realm of facts, being carried out along the idealistic functions of gesture, i.e. meaning, content, context.

Modulation[392] is the transformative concretization of movement (motion) on the one hand in general (abstract) through a change of function, e.g. a change of context, or in the sphere of facts as a change in objectively measurable or perceptually objective parameters, a transition from one hypostasis to another. Modulation would thus be an internal, intra-systemic transformation (within a single semiotic system) and would correspond in music to categories such as motivic variation, variations, and replication. Moving away in semiosis will blur the legibility of the generated object, as for example in Karol Szymanowski's *Variations* in B flat minor, op. 3, in which the transformations are so far-reaching that the theme in the last variation is barely recognizable. The significance of such an object within the system of the musical work, established by the composer as *a Bedeutungssymbol* (a sign of a sign in the system, e.g. assigning it a thematic rank) and the significance of shaping the relations between various objects may be based on principles other than semantic, even if it were to be only the reception of the output data. This would therefore apply to works of art expressed in a "structuralist" approach, e.g. serialism.

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[391] L. Bielawski, *op. cit.*, p. 180.
[392] "1. 'adaptation of the dynamic, pitch and timbre of the voice to the content of the words spoken'
2. 'change of some signal parameters under the influence of another signal'
3. 'Transition from one tonal key to another'
4. 'change in the intensity, timbre and pitch of the sound in singing' " [entry:] *modulacja,* [in:] *Słownik Języka Polskiego PWN* [source:] *https://sjp.pwn.pl/sjp/modulacja;2484221.html* [accesed: 01.05.2023]. [translation after Dictionary done by myself].

The basis of both types of transformation is, of course**, iconicity, an iconic analogy that allows us to make new discoveries about the source object of the sign by observing the features of the sign itself (as Bielawski would add: perceptible in different spaces). Space is, in a sense, an immanent feature of the act of transformation.** In this sense, the generational difficulty of gesture would particularly apply to aspects such as timbre, i.e. those that are difficult to translate into other systems of signs due to the subjectivised perceptual reception (see*: differences in synesthetic experiences and the subjectivity of building hierarchical taxonomies, e.g. the hierarchy of timbres as a continuation of *GTTM* in Lerdahl).

Bielawski emphasizes the potential for transformation according to certain psychoemotive features (embodied cognition) as, as I interpret it, the possibility **of partial, implicative transformation, and in fact the practical application of Peirce's pragmatic formula**: **S** is replaced by the prediction or experience of the effects **of S**, e.g. the experience of piercing, slightly disturbing sounds of thunder associated visually, aurically and emotively. The transparency of the transformation as a whole, its comprehensiveness, effectiveness and suggestiveness allows us to achieve the effect described above, which takes on the character of added value. This brings to mind the concept of an audiovisual pact and its results[393].

The transformation from one dimension into another entails the potential to break to a greater or lesser extent the general continuity of the structure or its perception. Therefore, transformation understood in this way should be perceived as lossy, which in turn leads to a weakening of the integrity of the initial gesture and the gesture transformed in the perception of the perceiver. The degree of loss depends on the level of complexity of the transformation, i.e. mainly on the degree of distance from the source object in the spiral of semioses, and both for this reason and the perceptual ability to refer to long-term memory, one can speak of strong and weak gestures.

3.3.2.3. Gesture interconversion – Phillip Tagg's approach (semiotic)

One of the proposals for understanding and exsecuting the "translation" of gestures within external visual and audial systems is proposed by Tagg's. Gesture interconversion (or simply gesture conversion), as the theoretician calls it, is a two-way process of mutual transformation of entities along the anaphonic relation (sound analogy) between the medium

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[393] *Cf.* M. Chion, *Audio-wizja*, *op. cit.*, pp. 100 and next and pp. 148 and next; L. Zielińska, *Kontrakt audiowizualny*, *op. cit.*

of music and phenomena that are in reference to music[394]. On the one hand, this transformation is subjective, since it concerns particular internal sensations, and objective, concerning the external features of animate and inanimate objects in material space.

Interconversion is, then, (1) externalization, the projection of an internal sensation expressed by a gesture onto an external phenomenon, and (2) internalization, the transfer of external phenomena by means of a gesture that corresponds in some way to the objectively measurable properties of external phenomena.

Tagg gives an example of the processes of externalization and internalization that take place, which I follow in the description of my own piece[395]:

(1) Outline of the shape of the object: irrefutable objectively measurable;

Friction of matches: movement of the hand continuous, repeated, but interrupted until the matches are lit. It produces a sound, it gives off a smell, it triggers a specific sensory experience of friction, detachment, and inflammation.

(2) Drawing an outline with the body: internalization in movement (with simultaneous change of scale and the possibility of simultaneous movement of different scales) and through movement: the experience of displacement in time and space, the experience of changes in the configuration of the hands (wrists and elbow) in scales (both 1:1, but it is possible to find other, similar ones in other scales);

(3) Charting (graphing, projecting) curves: externalizing the experience into the visual.

Tagg's concept is thus a form of Peirce's semiosis carried out along a community of experiences unified both by their iconic form and by their predicted outcome.

Slight "bend" of the hand curve = stroking experience = gesticulation: "No, not here! Go away!" = waves crashing on the beach sand = visual curvatures of the human body (contrapposto) = rapid spatial skips = ping-pong = gravity and levitation, etc.

Tagg, in consequence, formulates three premises, or rather observations, about gesture interconversion. First, mediation occurs between the objective property of the phenomenon and human sensory experience. However, they must already have an established, conventional, existing cultural connection. Secondly, the projection of gestures onto phenomena can take place through a community of general features, perceived in

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[394] P. Tagg, *Music's Meanings…, op. cit.*, pp. 502 and next.
[395] *Ibid.*, pp. 505-506.

different perspectives (proportions). Thirdly, gestures interchangeably with objective phenomena can be "translated" into each other by means of a common perspective and characteristics[396].

A very interesting observation of Tagg is the understanding of spatial unification as the search for such a configuration and its perception that would allow for a parallel in scale. A gesture is thus a miniature form of a phenomenon to which it has a reference taken out of context and which sometimes has to be grasped with some difficulty in order to understand the meaning of the operation. It is also interesting to point out the obligatory cultural provenance of such an operation (as opposed to unifying perceptual mechanisms of a precultural nature, such as embodied cognition), which stands in opposition to some of the theses cited in this paper. It seems to me that these transformational operations organize the perspective and at the same time reveal the history, style, period, ideological provenance, etc., but they are not an immanent component of the work, determining its essence. I will explain this intuition in the next chapter.

3.3.2.4. Hypotheses of the eternal return of archetypal gesture-figures (reductive) and their strephical construction (hierarchical)

In one of his articles[397], Klaus Lang devoted his attention to the peculiar conversion of spatial experiences into musical ones, the sense of displacement along the distance internalized in the Renaissance musical forms of ricercar and toccata. The elements that make up these forms, techniques or genres, such as the intense striking in the case of the toccata, are present throughout the history of music and are traditionally, instinctively referred to as toccating. On the one hand, it is a form of naturalization of categories into a form of convention, on the other hand, this convention did not create a uniform system of signs, a dictionary, but rather signs were adapted to the ideological content, proposing many variants of it. And so, between Alessandro Piccini's toccatas, Dietrich Buxtehude's toccatas, Bach' s Toccata in D minor BWV 565, Toccata from Stravinsky' s Violin Concerto in D major, or Lachenmann's Toccatina, there is not only an epoch-making, aesthetic, but also an ideological abyss.

Due to the methodological adoption of the paradigm of thinking about the transformation of gestures in case of Peirce's spiral model as methodologically important, this fact can be summarized as follows. Infinite semiosis is a reducible process: as one

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[396] *Ibid.*, pp. 507-508.
[397] K. Lang, *distanz und figuration* [source:] https://klang.mur.at/?page_id=289 [accesed: 01.05.2023].

moves away from the originally signified object, it is possible, to some extent, to trace the history of translations, the labeling of signs as certain forms appropriate to style, period or cultural provenance. **Reducing towards the source object, or the first transformations, allows us to reveal certain archetypal forms**, such as the comparison of the upward and downward movement (motion) of the hand in musical performance and the motion of sound structures related by the ancient Greeks and medieval scholars to stress (ἄρσις [ársis]) and relaxation (θέσῖς [thésis])[398].

A similar line of thinking is revealed by Smalley, who points to the archetypes of the trajectory of energy and motion of sounds, i.e. the dependence of density and spectral space on dynamic morphological formation, based on Grisey's spectral understanding of the phenomenon of sound, which is supposed to have **its three phases**: birth-aging-death (beginning-development-ending, attack-continuant-termination)[399]. All types of the triad have been assigned subtypes of a descriptive and metaphorical nature[400]. As archetypes, the basic forms to which more developed operations can be reduced, Smalley distinguishes the following[401]: [402]

(1) Attack-impulse: a momentary energy pulse;
(2) Attack-decay: The attack is extended by a decay;
(3) Gradual continuation: continuity of sound.

According to him, the history of compositional music is made up of whole sequences, chains of variants of these archetypes, resulting from the manipulation of the duration and spectral energy of the phases, their transformation and composition. In principle, infinite combinations of them can be created. Due to the fact that they are archetypes, they function as forms of naturalized compositional categories, and therefore cause a specific set of reactions in the recipient, especially in terms of building expectation, i.e. moving away from the starting point or approaching the point of arrival. Thus, they can be described as a form of musical universals[403]. Sloboda seems to be referring to the same thing when he refers to Schenker (in the context of Chomsky): "(...) he used to maintain that at a deep level all good

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[398] L. F. Hackenlively, *The Fundamentals of Gregorian Chant. a Simple Exposition of the Solesmes Principles Founded Mainly on Le Nombre Musical Grégorien of André Mocquereau*, Tournai, 1900, p. 81.
[399] It is not without reason that this fits into the spectral perception of the lexic of the "life cycle" of sound, which is reified, or even almost personified.
[400] D. Smalley, *Spectromorphology: Explaining…*, *op. cit.*, pp. 114 and next.
[401] D. Smalley, *Spectro-Morphology and…*, *op. cit.*, pp. 69 and next.
[402] Godøy refers to this indirectly, although I think, more intuitively, in the context of Schaeffer's thought (archetypes: sustained, impulsive, iterative). *Cf.* R. I. Godøy, *Images of sonic…*, *op. cit.*, pp. 58 and next.
[403] *Vide:* P. Podlipniak, *op. cit.*

musical compositions have the same type of structure, and that this structure speaks of something about the essence of musical intuition."[404]

According to my intuition, with the reduction of an infinite number of potentially infinitely long sound expressions to their source, it is possible to distinguish a finite number of primary sources, having the character of significant observed cognitive experiences, especially the experiences of the functioning of the human organism and the most basic forms of psychic sensations described iconically and metaphorically, for which the common point of departure is the experience of stability and instability, and from which the power of semiosis originates in a whole series of traditional sound operations. The following enumeration of such original experiences is open-ended, it is in the nature of a proposal[405]:

(1) Muscle stretch-relaxation (proprioception) / constriction-expansion / acceleration-deceleration / inhalation-exhalation / hold-let go / filling-emptying / pressing-letting go / tension-relaxation = consonsans-dissonance / dominant-tonic (VI) / parallelism-contrast / dynamics-statics;

(2) Fluent motion-point motion (equilibrium, balance) / condensation-dispersion / focus-scatter / order-disorder / direction-no direction / continuity-discontinuity;

(3) Internal-external / structural-relational / direct-metaphorical / filtered sound-"fullness" of sound / intention-attitude;

(4) Presence-absence / strong-weak / certain-uncertain / repetition-difference / anticipation-surprise / fullness-emptying / density-thinness / indifferentness-involvement (engagement);

The patterns about which I am less convinced and which are in a sense composites of a higher-order than the previous ones, and therefore reducible to those, and yet still remain potentially universal experiences, mainly related to tactile experiences, are:

(5) Experience of balance and place (*loci*): higher-lower / forward-backward / sideways (as directionality, vector, purposeness, displacement and location);

(6) Weight Experience: Heavy-Light;

(7) Experience of shape and size in space: fat-thick;

(8) The experience of the passage of time, including the life cycle: birth-aging-death / arising-abiding-fading / attack-continuant-termination;

(9) Experience of color, brightness, pain (nociception), social and psychic experiences, etc.

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[404] J. A. Sloboda, *op. cit.*, p. 14. [translation after Sloboda done by myself].
[405] Here I expand Tagg's understanding of internalization and externalization in relation to these biological and psychological experiences.

Potentially problematic, and as such open to research and artistic implementation, may be the field of patterns of experience that have a historically established weak connection with musical works, or are outright experiences that do not belong to humans:

(10) Experience of taste, smell, temperature, echolocation, ultrasound, electroception, magnetoception, hydrological environment anomaly monitoring, etc.

Due to their direct reference to primary experiences, ignoring cultural and symbolic systems, it can be said that these are pre-cultural forms of gestures, the use of which as basic form-forming and sound-forming processes in music is intuitive. It is not uncommon for many complex processes to be reduced to these original shapes. The dispute about whether these relations can be made present in sound or through sound, and whether sound structures are only an iconic, metaphorical analogy, seems to be intersected by Peirce, equating, identifying the reaction to an object, the effect that the object exerts with the object itself. This should be understood in such a way that if music affects the listener by evoking a sense of tension and relaxation in him (the effect exerted by the object), then it can be said that musical structures are (methodologically) gestures of tension and relaxation, or even tension and relaxation itself (the object).

Reduction, then, is a form of introducing a platform that is not so much a consolidator as a reconciliation platform, and it is a form of Occam's razor: on the one hand, it reduces the layered assumptions and concepts into a more transparent, organically natural and conceptually and sensually accessible image. On the other hand, the use of Occam's razor in relation to gesture as a concept that does not find its full-fledged and proper counterpart in the current theory of music, when even the use of concept complexes does not seem to exhaust the gestural complexity, confirms the validity of its use.

- Fragments, hyphae
- Lower-order assemblies (both gestures and gesture constituents)
- **The Zone of Proper Context (Gesture as a Synthetic Whole):**

   Semiosis (+ pragmatic maxim): Source object (gesture) – Semiosis 1 – Semiosis 2 – Semiosis 3 – (...)
- Higher-order assemblies (gesture + gesture...)
- Phase (stage) of the piece
- The layer (medium, technique) of the work's dramaturgy
- The whole dramaturgy of the piece
- A Musical Work as a Gesture
- A complex of musical works as a gesture
- Genre as a gesture[406]
- Style (domestic, outdoor) as a gesture
- (...)

Figure. 31. A proposal for a zonal gesture construction.

By presenting the above diagram of the zonal construction of the gesture (based on the reductive thinking described above), I draw a parallel to Bielawski's zonal theory of time[407], and in fact I apply it in the context of gestures as coupled with the reduction of the hierarchical matrix. I hypothesize that it is necessary to adopt **a zonal theory of gestures**, in which, due to psychocognitive limitations, gestures are observed as new, or at least modified (creation of a new quality) along with a smooth transition to a higher and higher level of composition (scaling). These levels can be perceived from the smallest independent particle in a musical work (or even its further reduction, e.g. a single sound through frequency dependencies to rhythm), through their compositions, including the perception of similarity, the dramaturgy of the whole, the whole work as a gesture, or – crossing a certain zone barrier – also due to the preposterous bond of mutual commentary – perceiving a number of works as a gesture that shapes the style, a current, an epoch.

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[406] Being aware of the different understandings of the concept of genre, I see the possibility that it will not always be possible to read it gesturally. The scope of genres, especially those understood in close connection with prâxis (e.g. liturgical music, vocal-instrumental music), may be too general and broad. When I talk about genre as a gesture, I am thinking especially about those that embody forms of psychophysical experiences, e.g. dance music.

[407] This theory is based on Stockhausen's time-octave theory. *Cf.* L. Bielawski, *Czas w muzyce i kulturze, op. cit.*; L. Bielawski, *Strefowa teoria czasu i jej znaczenie dla antropologii*, Kraków, 1976. Methodologically derived from Peirce, *Cf.* L. Bielawski, *op. cit.*, pp. 49 and next. Nb. It is also worth mentioning Godøy's already mentioned intuition about time scales, specific perceptual approximations in which sound and motion objects and mental scripts of embodied cognition are perceived. *Cf.* R. I. Godøy, *Timescales for sound-motion objects*, [in:] E. Tomas, T. Gorbach, H. Tellioglu, M. Kaltenbrunner (ed.), *Embodied Gestures*, Wiedeń, 2022 czy R. I. Godøy (et al.), *Exploring…, op. cit.* The already mentioned concepts of Meyer's hierarchy, Chion's musical myth and Bregman's auditory scene are also worthy of merit. Similar intuitions, as I indicated earlier, were also expressed by Smalley. This also explains Grisey's triad of typology of the times of insects (birds)-humans-whales. Hierarchical order was also mathematically recognized as necessary by Mazzola.

Two vectors are visible above: **vertical (hierarchical**; distinction as a new unit) and **horizontal (transformational**; reduction, variation, semiosis). Semiosis is possible at any of the vertical stages. However, as Delalande, Hatten, and indirectly Adorno point out, each of these actions preserves its original context, i.e. a trace of the artist-performer's action, atmosphere, dramaturgical intensity, sense of purpose, etc. This storage takes place in a specific vessel, e.g. the separation of the phases of the sound structure from each other (attack-decay) is in a way the creation of a closed whole abstracted from its initial context. In addition to the fact that they generate a new whole, i.e. a variety of transformations, the complexes of higher and higher levels not only store the contexts of their constituent elements, but also produce "added value", their own context. Hence, I distinguish the zone of the full, proper context, in which the components of the gesture merge it into a homogeneous vessel having both the contexts of lower-order elements and this "added value". The lower the level, the more likely it is to be iconic, imagery, concrete, and captured. The higher it is, the greater the probability of the necessity of arbitrary operations of metaphorical, systemic, conventional, cultural, abstract and intuition, i.e. hypothetical judgment. The higher the folds, the more extended they are to observe, and the lower they are, the more selective, and therefore short and concise.

When creating the transformations of gestures for *visibilium et invisibilium,* I relied on the two hypotheses mentioned above – reductive and hierarchical. In order to leave the course of this dissertation concise, and at the same time to explicate my assumptions, I will present below a number of such transformations.

The first, source gesture was to extract the sound from the whip (frusta) and I focused my initial search around it. At the same time, I immediately decided to generate it into a different type of gesture, i.e. the friction of a match, which is itself **a Central Gesture**. This can be expressed as follows: **O:** Frusta observed through *Schlieren* – **S:** Match observed through *Schlieren* – **I:** Dominik Puk (as composer). At the same time, it was an action which, from the very beginning, weakened to some extent the legibility of the connection and impoverished further transformations, making them loser, on the one hand, due to being taken out of context, and on the other hand, due to the act of transformation itself.

Examples of compoundments and gestures that explain the gesture of a match:

Figure. 32. The "friction" gesture: prolonged attack ("friction"), crystallization in *audio-playback* (a sample of friction ending with a light on, "ignition"), decay (in the orchestral part and *audio-playback*, "fumes"). *visibilium et invisibilium,* mm. 3-4 (reduction).

Figure. 33. The "friction" gesture: attack("friction")-decay("fume"). *visibilium et invisibilium*, m. 8 (reduction).

Figure. 34. The "friction" gesture: attack("friction")-decay("fume"). *visibilium et invisibilium*, m. 12 (reduction).

Figure. 35. The "friction" gesture: attack (double bass, saxophone, bassoon, "friction") - reverberation stretched over time (strings, "fume"). *visibilium et invisibilium*, mm. 32-34 (reduction).

Figure. 36. Gesture-reference (Filidei): attack ("friction")-decay (two-layered – strings with accordion *vs* winds, "fumes"). At the same time, the gesture conveys the polygenic quality of friction (repetition of sounds, *vibr.*). *visibilium et invisibilium*, m. 59 (reduction).

Figure. 37. The "friction" gesture: the assembly of several layers (attack, "friction" *Tutti* at the same time: strings with accordion and crotals: attack("friction")-decay("fumes"); clarinet, saxophone, trombone with piano and harp: decay ("exhalation"); contrabassoon, drone bow: background) of the same gesture, in a synchronization weave. *visibilium et invisibilium*, mm. 59-64.

Figure. 38. The "friction" gesture: an extended attack ("friction"), decay ("fume") shortened at the moment of crystallization ("ignition"). *visibilium et invisibilium*, mm. 62-64 (reduction).

Figure. 39. The "friction" gesture: attack ("friction")-reverberation ("fume"), postponement of a weakened conclusion ("inflammation"), which is unsatisfactory, but clearly closing. *visibilium et invisibilium*, mm. 109-115.

Figure. 40. The gesture of conclusion ("ignition"): the materialization of the harmonic spectre. *visibilium et invisibilium*, mm. 136-138.

Figure. 41. The attack gesture ("friction", *Tutti*): decay ("fume", piano, harp, percussion), dispersion of a previously clarified provisional conclusion ("inflammation"). *visibilium et invisibilium*, mm. 142-146 (reduction).

Figure. 42. The "friction" gesture: renewing the attack ("friction"), arousing the expectation of a conclusion ("ignition"). *visibilium et invisibilium*, mm. 266-274 (reduction).

Figure. 43. The "friction" gesture (violin I): a previously weakened attack ("friction"), repetition without conclusions ("inflammation") juxtaposed with a gesture of decay ("fume", *Altri Archi*) – dispersion of overtones of the harmonic series C and G. *visibilium et invisibilium*, mm. 275 (reduction).

Figure. 44. The "friction" gesture: attack ("friction", *Arpeggios*), no conclusions ('inflammation'; reverberation, 'exhalation' in the form of *glissandos*). *visibilium et invisibilium*, mm. 79-81 (reduction).

Figure. 45. Gesture-reference of "friction" (Bach): attack ("friction", *Arpeggios*) repeated, leading to a harmonic conclusion ("ignition", building harmonic tension). *visibilium et invisibilium*, m. 287 (reduction).

Figure. 46. Gesture-reference of "friction" (Bach): distortion with techniques (inhalation-exhalation in wind instruments). *visibilium et invisibilium*, mm. 74-76 (reduction).

Figure. 47. Gesture-reference of "friction" (Grisey): attack (repeated), conclusion (distorted, "arpeggiated" appearance of a harmonic spectre). *visibilium et invisibilium*, mm. 288-290 (reduction). Nb. this gesture itself is an echo, an "exhalation" of the gesture of "friction" taken from Bach.

Figure. 48. Gesture-reference of "friction" (Stravinsky): attack ("friction", *Arpeggios*), repetition (weaker and weaker), without conclusions ("inflammation"). *visibilium et invisibilium*, mm. 306-310 (reduce).

Figure. 49. Gesture-reference of "friction" (Bortnowski): attack ("friction"), repetition (weaker and weaker), without conclusions ("inflammation"). *visibilium et invisibilium*, mm. 94-98 (reduction).

There are more gestures similar to the above, e.g. the gesture-reference of "friction" (Zielińska) in the *audio-playback part* in the opening of the third movement: distortion, stretching of the repeated figures ("friction"), lack of conclusion ("ignition"). *visibilium et invisibilium*, mm. 261.

Figure. 50. Granules (music boxes) – a gesture of "continuation": a process based on impulses alone, without homogeneous attack or termination, pure duration. *visibilium et invisibilium*, m. 2 (reduction).

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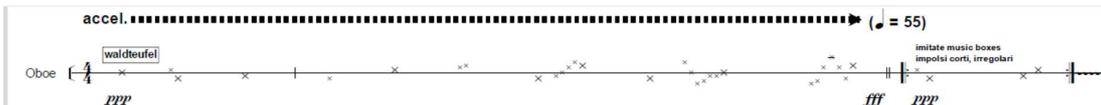
Figure. 51. Granules (waldteufel) – the gesture of "continuation": a process based on impulses alone without a homogeneous attack, but with an oscillatory characteristic (polygenization of continuation). *visibilium et invisibilium*, mm. 18-20 (reduction).
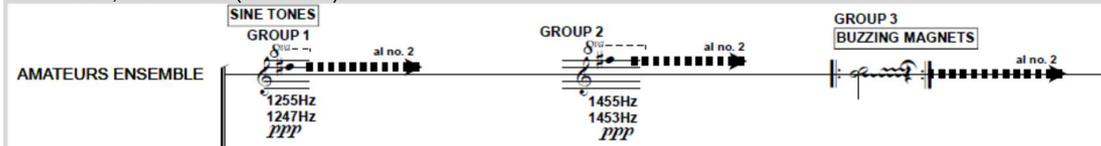
Figure. 52. Acoustic beats – a gesture of "continuation": no attack ("friction") or conclusion ("ignition"), pure continuant. A separately introduced gesture of "attack" ("friction") – tossed magnet olives. *visibilium et invisibilium*, m. 322 (reduction).

Figure. 53. A "picardy" gesture: an attack ("friction") in the video, an echo ("fume") in the orchestra. *visibilium et invisibilium*, m. 411 (video-playbac).
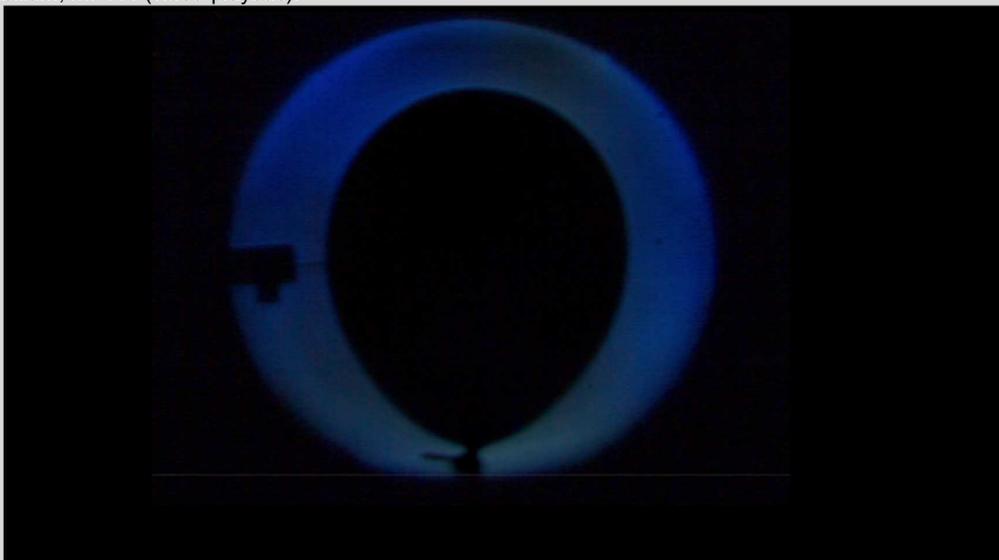
Figure. 54. Balloon popping gesture: retrying ("friction"), when the needle is as close as possible to the balloon surface, "cutting off the gesture". *visibilium et invisibilium*, mm. 326-355 (video-playbac). Nb. parallel to movement I.

As a result of assembling into larger, synthetic wholes, it was possible to abstract new gestures, of a higher order of their composition, e.g. the gesture from Fig. 46 (wind instruments), a new gesture of processing the gesture from Fig. 45 (audio-playback; stretched in time by many hundred percent), the gesture from Fig. 36, folded into the segment of orchestral number 5 (Fig. 37). The chords adopted as the harmonic basis result from the gesture from Fig. 45 (reference to Bach's quotation). At the same time, proximity in time to the gesture from Figs. 39 and 49 is supposed to be a "connection of gestures", as if it were the same gesture observed in different time perspectives (Fig. 45 – stretched, distorted, 39 and 49 – intensified, condensed). At the same time, a number of gestures are introduced in chains, superimposed on previously initiated processes, e.g. stratifying temporal systems [VI, vol. 326-355].

In a sense, the entire form of the work, as almost the highest hierarchical level, corresponds to the construction of this gesture: preparatory (building up, rehearsing – "friction" – without much conclusion, or only with a temporary, not so strong stage conclusion – "ignition") – culminating (crystallization of conclusions, "ignition") – resonant (dispersion, "fumes"). The process of generating gestures was based on the dissection of the phases of the gesture itself and multiple folds, juxtapositions of these phases like building blocks.

3.4. Space (dimensions) of the gesture

"Sound, as physical energy reflecting and absorbing into the materiality around us, and even one's self, provides a rich platform for understanding place and emplacement. Sound is always already a trace of location."[408]

As I have already mentioned, the transformation of the gesture according to Bielawski is a fundamental problem, because it serves to transfer the movement to another space by means of a transformer, providing the gestures with generative vitality. Similarly, intersemiotic translation serves to transfer a sign from one semiotic system to the target system by means of the translator's use of common elements of both systems. Already in this juxtaposition of two similar understandings of transformation, one can also see a double understanding of space, the dimensions of gesture: (1) as a physical, topological space, captured in the dimensions of Euclidean geometry, and (2) as a space captured virtually, metaphorically, e.g. in other semiotic systems, and the dependence of these contexts on the perception of the recipient, who can smoothly and contextually make the transition between the above-mentioned types of understanding.

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[408] B. Labelle, *Acoustic Spatiality,* [in:] *SIC – Journal of Literature, Culture and Literary Translation*, 2 (2), 2012, p. 1.

3.4.1. Real and metaphorical space

The experience of this double intentionality is present in the formation of the conventional musical notation commonly used in the Western tradition. Firstly, it is a spatio-temporal experience, where the passage of time is iconically depicted as a proportional spatial transition from left to right, capturing the processual, periodic character of sound events, and secondly, it is a pitch, spectral element, presented metaphorically as a transition of position vertically, corresponding to a reflex perceptual intuition that places sounds of a higher frequency in "higher position" and those of a lower frequency in "lower position". Since the Middle Ages, musical notation has been based on the representation of two measurable distances between sounds in the form of a graph of the function x(y) as their basic dimensions.

The score is therefore a vertical-horizontal structure. Janocha draws attention to the fact that the pitch dimension is perceived as less independent and at the same time dependent on the time dimension, and that this dimension as a frequency contains as a collapsed dimension certain internal values that go beyond the customarily perceived purely pitch information, e.g. the harmonic spectre quantized with respect to the fundamental tone. Similarly, the time parameter indicates not only the duration, but also the moment of appearance of the sound (attack), the number of deflection of the wave in time[409].

Janocha also points to other dimensions, such as timbre (a dimension collapsed in frequency and time, created by the energetic proportions of a harmonic polytone) or five-dimensional physical space (known from Euclidean geometry, perceptible to the listener along each of the dimensions), in which the distance of position can be observed in relation to the x, y and z axes (elevation).[410]

As a result, a hypothesis is proposed in which "musical gestures taking place within any two dimensions of the sound space can be transferred to the plane of any two others".[411] The transformation between dimensions therefore requires mainly the preservation of the iconic and, to the necessary extent, metaphorical features. Janocha's position is therefore pragmatic and formalistic.

These considerations coincide with Bielawski's considerations. Bielawski points to time (the unifying, stable plane, thanks to which transformation is possible) and space (the

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[409] M. Janocha, *op. cit.*, p. 22.
[410] *Ibid.*
[411] *Ibid.*, p. 26. [translation after Janocha done by myself].

differentiating, unstable plane, which is the object of transformation) as two planes of observation of movements in perception. "At the root of time and space as context lie the linear scales of time and space."[412] Bearing in mind Roy's remark about the key role of the unstable element (the figure) in grammar, which gives meaning to the analysis, this role in the transformation will be played by space, which, according to Cassirer, is supposed to define the event and explicate the form of life[413],[414] and its understanding and potentially the understanding of the gesture. Space, in this case, is understood as all dimensions in which motion is possible, and therefore not only as physical three-dimensional space[415]. At the same time, the types of motion space stretched between the emotional and aesthetic layers are indicated:

(1) **Somatic**: having its primary source in muscle tension and relaxation. The transformers of the movement of the somatic to the auditory space are speech and music;

(2) **Audial**: it has the dimensions of pitch, volume, timbre and elevation, i.e. position in physical space;

(3) **Physical:** corresponding to a topological space in Euclidean dimensions;

(4) **Visual**: it has primarily three dimensions of perceiving motion, introduced without the need for transformers, and other dimensions, such as light intensity or color, the introduction of which into space requires the use of transformers;

(5) **Symbolic (mental):** has an indefinite number of dimensions. It is understood in three ways: (a) as a motion, a train of thought at different tempos, (b) as the

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[412] L. Bielawski, *op. cit.*, p. 181, *Cf.* 179-180. [translation after Bielawski done by myself].

[413] *Cf.* M. Ball-Nowak, *Ernst A. Cassirer – teoria symbolu i formy symbolicznej*, [in:] *Rocznik Naukowo-Dydaktyczny*, excercisebook 130, *Prace Filozoficzne*, 5, 1990, p. 35.

[414] It is also impossible not to mention the approach to space as a very close form of life, i.e. in the form of a soundscape. *Cf.* R. Murray-Schafer, *Our Sonic Environment and The Soundscape the Tuning of the World*, Rochester, Vermont, 1977. Katarzyna Szymańska-Stułka draws attention to the potential of environmental psychology as a research perspective thanks to which it is possible to determine the degree of impact of the environment on human life and activity, including the mutual relations of artists and space: interdependence and mutual influence. Such a space is not only (1) being located in a specific place, but also (2) a social and cultural environment that generates norms, values and practices. Hence, we should distinguish (1) personal space, (2) territorialization: pattern of behavior and experiences in relation to personal space, (3) degree of density: subjective perception of space. *Cf.* K. Szymańska-Stułka, *Muzyka a środowisko na przykładzie wybranych kompozycji Aleksandra Kościowa*, [in:] *Aspekty muzyki*, vol. 9, 2019; K. Szymańska-Stułka, *Przestrzeń jako źródło strategii kompozytorskich*, Warszawa, 2020. Skórzyńska, in turn, draws attention to more ontological shapes of space: (1) Heidegger's the clearing: a space oriented towards the understanding of being, (2) the field of possibilities (in Bourdieu's sense): determining what actions actors can take; (3) *plenum*: rhizomatic discursive forums or agonic spaces (4) limited domains/realms: goal-oriented practices, way of approaching the "topic". Nb. here there is also a statement about the "temporality of the field", so also for philosophers and culture experts, space remains a dimension collapsed in time. *Cf.* A. Skórzyńska, *op. cit.* The mentioned research perspectives being "outside the work" can show how the "internal" reality is shaped in the musical work. These are not just "ornamental" additions to the study of sound gestures, but methods of understanding the way gestures function as *prâxis*, including their understanding and production, the possibility of their technical functioning at a given time period (just as the technical development of pianos allows us to understand the development of Beethoven's piano sonatas), and then they can certainly illuminate the issues of gestures as communication phenomena and universals. They are certainly a promising addition to an integral analysis of the work.

[415] L. Bielawski, *op. cit.*, pp. 167 and next.

motion of images of represented objects (projection), (c) as a reflection of somatic movement, if it is conscious.

Movements are encoded in it, and this is done through[416]: (a) learning about their proper capabilities, (b) movement experience.

Enabling the process of interpretation, according to Bielawski, is thus an opening of transformation not only to the preservation of features in an iconic way, but also in a metaphorical sense[417]. It follows from the above that Bielawski's position is therefore idealistic. Space and its understanding not only explicates the form of life, but also the creative aesthetic attitude, including that of the composer or analyst, which translates directly into the sphere of musical gestures.

3.5. Summary of subjective, transformative and spatial issues

At this point, it is worth mentioning the practical dimension of the apprehension of the subjects of gesture in the context of the application of the transformational concept and the concept of space, as it justifies the Western paradigm of perceiving a musical work as a work of art, taking place in the triangle: composer-performer-listener[418].

Each of these categories of subjects is entitled to an emblem, a causative artefact: the composer is entitled to a score (or any other form of articulation of the musical work), the performer is entitled to a gesture (in a narrow sense, performative, perceived in a three-dimensional space: height, topological location and extension in time), and the listener – **perception** (perceiving) sound phenomena, i.e. basically their mental image and the reactions derived from it. According to Bielawski's concept, everyone is entitled to a different type of space. Between these categories a transformation was implied.

The musical gesture of performance is thus transformed in two ways by means of two transformers: (1) by instrumentalization using the instrument's interface[419] into sound structures, and (2) by a bipolar process of "freezing" and "thawing" using the notation of the musical structure written in the score.

Due to the fact that the musical work is read in the light of Ingarden's understanding, but also that of Kreidler and Lehmann, and in the light of the knowledge of gestures and their

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[416] In this sense, Bielawski's thought meets Tagg's concept of a system of musical signs, especially anaphones.
[417] L. Bielawski, *op. cit.*, pp. 168, 170 and next.
[418] *Cf.* M. Kędziora, *Muzyka w czasie. Czas w muzyce* [not published yet].
[419] Due to the broad understanding of the instrument, the interface will be not only the keyboard, strings, keys, etc., but also elements of the programming environment in which commands are issued (e.g. of a "window" oriented or "line" oriented characteristics).

nature, I believe that this transformational type in general is maintainable, although it narrows the understanding too much. The diagrammatic nature of the score and its bureaucratic character are not **a necessary** condition for the existence (freezing, thawing) of gestures, nor for their power. Often, as is revealed, transcriptions into Western notation of musical works created in the oral-performative tradition, in the tradition of a different notation, or in a different musical culture in general, will even weaken or hide their essence, e.g. transcribing only the pitch-rhythmic-dynamic-agogical-articulatory properties of the music of the Quebec Inuit would not be able to reproduce the movement and expressive properties of gestural shapes. **The search for an appropriate medium for the full transmission of gestural information, resulting from the revaluation described above, is an urgent need.**
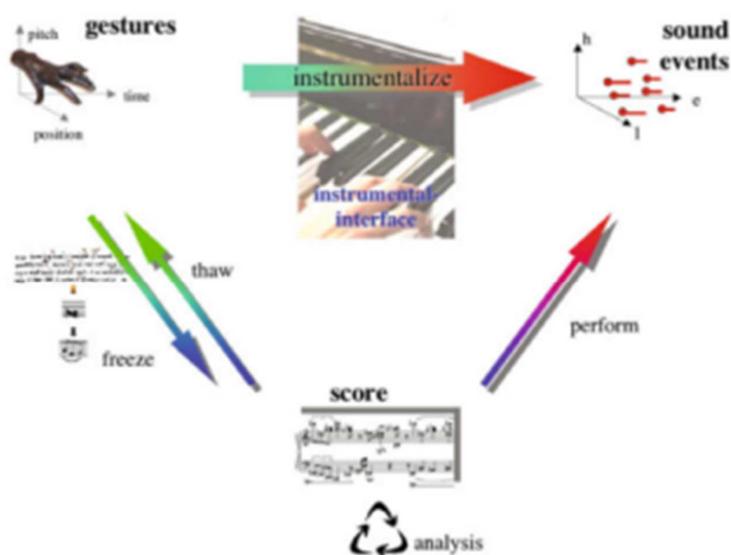
Figure. 55. The triangle of transformation proposed by G. Mazzola (the triangle of the Western type of musical performance)[420].

3.6. Gesture functions

According to Hatten, analysing and interpreting gestures results from the search for their function in the grammatical system of the musical work. Godøy makes a similar claim, although here the basis of the study is reactions, embodied cognition, rooted in perception. Grasping these relations illuminates the diversity of ways of perceiving and understanding. It seems that when grasping the subject and space of a gesture, it is impossible not to grasp their function, hierarchy or mental images that these gestures cause. Correct understanding is then disturbed, regardless of whether individual perception is focused on the search for meanings or on the reception of sensory experiences. Smalley wrote very emphatically about

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[420] G. Mazzola (ed.), *op. cit.*, p. 900.

the nature of the functions of gestures, their contextual changeability and embedding in the current, not to say temporary, perception of a musical work[421]:

(1) The assigned functions result from intuitive expectations of psychological time (dramaturgy);

(2) The assignment of a function is a process: it is subject to constant revision until the end of the piece due to the temporal linearity of the perception of the musical work;

(3) Ambiguity in function assignment can occur due to context, especially when overlapping processes or motion;

(4) One can't set an explicit time limits (zones) for transitions between function types.

The assumption is therefore fluid functional contextuality. Cassirer would even say that art, as a sphere of pure forms and not of experience, is filled with the most vital forces of the passions, but their nature, sense and meaning are different or transformed: they are subjective to what exists in reality, that is, exists in objective way[422].

The fundamental question, therefore, concerns the distinction of functional classes and levels, useful for a broad understanding of gesture, as elements of a uniform basis that would keep different understandings in check, transcending methodological differences. Functions are distinguished due to their relation to the morphology and perception of gestures, categorizing them into four areas, which are determined by four basic understandings of gestures:

(1) **Somatic functions**: attitude to bodily activities, sensory experiences;

(2) **Semiotic (linguistic) functions**: relation to carriers of meaning;

(3) **Cultural functions**: attitude towards codified (systemic) symbolism;

(4) **Abstract "control" functions**: the attitude towards abstract numbers and formulas, especially generative rules and systems, both arbitrary and speculative (the special role of projection on structural elements), computational systems, interactive systems (e.g. motion as input or output data), but also gesture as any action through which a person informs or transforms the immediate environment, including manipulative gestures performed in order to produce sound.

The assumption that musical gestures, even abstract ones, belong to the world and to semiotic processes is a very popular approach (Mazzola, Hatten, Tagg, Adorno). It is also well grasped in the thought of Cassirer and other philosophers and aestheticians, in the

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[421] D. Smalley, *Spectromorphology: Explaining…*, *op. cit.*, p. 115.
[422] S. Raube, *op. cit.*, pp. 107, 109.

skilful drawing of parallels between linguistic phenomena and their implementation to musical phenomena as such.

Distinguishing functions and their levels is necessary so that the communicative value of the gesture does not become merely a conceptual set of arbitrary categories, but that it continues to retain its explanatory power of phenomena. Examples of typologies that can be applied to gesture theory are: (1) Smalley's division into gestures and textures (cf. chapter 2.6), (2) Cassirers division of signs into signals and symbols[423] (the latter divided into: expression, representation, and pure meaning[424]), (3) Hatten's division of gestures into stylistic (idiomatic) and strategic (constructivistic) with their subcategories[425], (4) Tagg's division of sound [426]signs into anaphones, diatactic (constructivistic) signs, stylistic (idiomatic) signs with their subcategories[427], (5) Godøy's Schaffer-inspired division of gestures into: sound-producing (performance), sound-encoding (communicative), accompanying (mimetic in other sign systems), [428](6) Zhao and McNeil's division of the gestural functions of language into: interactive carriers of meaning, control, metaphor with their subcategorizations[429], (7) division of Bruner's triggers of effective surprise into cognitive-lingual, constructivist and phonological with their subcategorizations[430], (8) division of gestures in *HCI sonification*: according to the way they are produced (trajectory-based, force-based, pattern-based) and according to the characteristics of their course (effective, accompanying, graphic).[431]

3.7. Methods of gesture testing

Based on the subject, space and functions of the gesture, as well as the knowledge of its construction and its effects on reception, it remains to indicate the methodology of studying gestures in the strict reality presented in a given musical work. In principle, this study allows to show the intellectual virtuosity of the analyst and interpreter, and due to the

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[423] E. Cassirer, *Esej o człowieku, op. cit.*, pp. 45 and next.

[424] P. Parszutowicz, *op. cit.*, pp. 98 and next.

[425] R. S. Hatten, *Interpreting Musical Gestures…, op. cit.*, pp. 136-137.

[426] A similar postulate is expressed by Chion when writing about *Materializing Sound Indices*: they „denotes aspects of a given sound that make felt more or less accurately the material nature of its source and the concrete history of its emission: its solid, gaseous or liquid nature; its material consistency; the accidetal features that arise during its unfolding, and so forth. The materializing sound indices of a sound can be greater or fewer In number and in limited cases, a sound can have none". [in:] M. Chion, *Sound an Acoulogical Treatise*, transl. J. A. Steintrager, Durham, 2016, p. 267.

[427] P. Tagg, *op. cit.*, pp. 485 and next; *Cf.* with earlier version of the text: P. Tagg, *Towards a Sign Typology of Music*, [in:] R. Dalmonte, M. Baroni (ed.), *Secondo convegno europeo di analisi musicale*, Trento, 1992, pp. 369-378.

[428] R. I. Godøy, M. Leman (ed.), *Musical Gestures…, op. cit.*, pp. 23-24.

[429] R. I. Godøy, M. Leman (ed.), *Musical Gestures…, op. cit.*, pp. 14 and next. Nb. Hatten also refers to this concept, however, emphasizing their gestural, directly corporeal character (as idiosyncratic movements of the body's limbs accompanying new movements - perceived by McNeil not as repetitions of the content contained in speech, but as its supplement). *Cf.* R. S. Hatten, *Interpreting Musical Gestures…, op. cit.*, p. 105.

[430] J. Metsämuuronen, P. Räsänen, *op. cit.*

[431] T. Lis, *Tworzenie muzyki przy pomocy gestów*, Wrocław, 2015, p. 6, 11-12 [master thesis, not yet published].

multimodal nature of the gesture, it can be carried out from different points of view: semiotics, especially the language sciences, thanks to which multiple meanings are generated, physics, organology and acoustics, biomechanics and cognitive science, medicine, especially psychiatry, physiology, human motor control, auditory and visual perception, musical performance and dance, music theory, music technology, *sound design*, robotics and *HCI, CAC*, aesthetics, ethnomusicology, cultural studies, sociology and other sciences.

The ordering of this nexus of possibilities can take place according to Godøy and Leman's proposal[432]:

(1) "Consider observation and/or introspection;
(2) consider qualitative and/or quantitative methods;
(3) consider motion capture;
(4) consider processing and representation;
(5) consider simulation and/or animation;
(6) Consider annotation and interpretation."

Another type of consideration is proposed by Christophe Ramstein[433]:

(1) Phenomenological approach: descriptive analysis of properties, especially motion, space and periodicity;
(2) Functional approach: indicating functions in a specific context;
(3) Internal approach: the conditions for making a gesture from the musician's point of view.

According to Ramstein, function determination is only one of the elements that make it possible to build a research system of gesture topologies as general schemes that will make it possible to design dense input devices in *the HCI*[434] sonification system in practice.

On the basis of the above theories, one can get the impression that the study of gestures is suspended between the development of typologies and their practical applications, and the search for unifying planes (analogies between systems of signs). This is certainly the case with regard to the gesture as a *prâxis*, as a social fact, combining ontic elements with sets of practices that generate multiplying transdisciplinary research proposals[435].

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[432] R. I. Godøy, M. Leman (ed.), *Musical Gestures…*, *op. cit.*, pp. 28-30.
[433] *Cf.* C. Cadoz, M. Wanderley, *Gesture music…*, *op. cit.*, p. 74.
[434] *Ibid.*, p. 79.
[435] Attempts to observe this paradigm in a multidimensional way as a diverse practice are made, for example, by a blog *Gestes, instruments, notations …dans la création musicale des XXe et XXIe siècles* [source:] https://geste.hypotheses.org/ [accesed: 01.05.2023], or interesting monograph of E. Tomas, T. Gorbach, H. Tellioglu, M. Kaltenbrunner (ed.), *Embodied Gestures*, *op. cit*. A general proposal for a research methodology that

3.8. Useful definition of a musical gesture

Despite the radical broadening of the approach to this issue, including the re-evaluation of some of the observations expressed in my master's thesis on gestures or the solution of some of the problems outlined at that time (distinctive and analytical), I was surprised to discover that the definition of gesture constructed (or rather adapted) by me in the past remains valid in principle and is still able to reconcile the divergent positions of the authors, who seem to agree only on the fact that that a gesture encompasses both movement (motion; in a material or immaterial sense) and some form of meaning (presemotic or within a system of signs).

In my opinion, a musical gesture is **a shapeable system of movement (motion; energy) in specific dimensions (spaces), which can be assigned meaning and function in relation to the structure of a musical work, and which is perceived as a carrier of meaningful (communicating) information for the recipient, systematized by grammatically and contextually defined rules of meaning**[436].

A gesture has its objectively measurable, describable substrate of a *quasi-material nature*. The gesture causes both material effects, e.g. a change in the arrangement of space, and non-material effects, e.g. the mental-bodily activation of the recipient on the symbolic level or on the level of embodied cognitions.

A gesture in the musical sense has the nature of a sign and is at least the first transformation of the original object within Peirce's semiosis, or in other words, a symbol or signal taken out of its original context. For this reason, thinking about a gesture is methodologically identical to thinking about its effects. From this I conclude that the gesture has a phenomenological ontology, similar to the ontology of a musical work in Ingarden's view.

For its teleological effectiveness, the musical gesture forces an appeal to the perceptual rules of meaning (the "interpretant" resulting from the grammar of perception as the opposite of compositional grammar) and the perceived space as a unifying platform (as well as a distinctive one, on the basis of which the types of gesture understandings are distinguished).

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integrates the field of practice and the field of theory into a nexus in which approaches oriented on embodied cognition, based both on τέχνη [*technē*] and ἐμπειρία [*empeiría*] or *gnōsis*, on the one hand, and situated cognition, based on *doxa*, are equally valid , or abstract cognition based on *epistēmē*, was convincingly proposed by Skórzyńska. *Cf.* A. Skórzyńska, *op. cit.*, pp. 52 and next.

[436] *Cf.* D. Puk, *op. cit.*, p. 48.

Musical gestures are organized both hierarchically and reductively due to their transformative nature and the constant production of perceptually distinguishable new units – both their new "translations" and new "assemblage".

3.9. Summary – the history of the long term of the gesture in music

From the above theoretical perspective, it is possible at this point to review the history of music in terms of idea of a musical gesture in case of long term, in which this idea could germinate or find full-fledged realizations. I call these firstfruits gestures, being aware that describing them in such a way may risk being accused of an ahistorical attitude or arousing nomenclature controversy. On the other hand, the aim of this dissertation is to show that the history of compositional music, at least since Frescobaldi or Rameau's harmonic discoveries and the accompanying extensive discussion on acoustic phenomena, captured in Herder's reflection as a monad, is the history of an attempt to generate synthetic sound shapes with their own motions, purposefulness and meaning, on the one hand objectified as a sensory experience available to all people. On the other hand, it is subjective, contextual and reflective, which is impossible to grasp directly when dissecting the work into smaller parts.

These intuitions can already be found in Greek music, which, although poorly in sound form, is very well known to us theoretically (Plato, Aristotle), and whose most distinct core are syncretic styles and genres: dramas, in the relation of words, performativity of actors and sounds, seeking the embodiment of *kátharsis* or *choreía* as an example of the equalization of physical exercises, words and sound structures in achieving musical and movement (motion) unity. It is also possible to look for styles similar to *choreía* as its ideological continuations through the centuries to the present day (military music, *Verbunkos*, work songs[437]). Finally, it is also worth mentioning the trends in which the healing pleasure of music is placed at the center (both for the body and the spirit): *musique d'aublement* (with ideological continuators in the form of *Farstuhlmusik*, or *Muzak*), *ambient*, *rave*, *deep listening* (Pauline Oliveros), and finally *ASMR* (based on the controversial theory of universal tingling sensations inducing motors).

The encounter between the image of human movement and the conventionality of reading meaning can be observed in gestural Japanese culture, the quintessence of which is *Nō* theatre. A similar thing happens in the Indonesian gamelan, in which the sound-producing gesture is synonymous with the position in society. Gestures in the European Middle Ages and the early modern period can be found in Gregorian chant, in theory referring to the

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[437] K. Bücher, *Arbeit und Rhytmus*, Lipsk, Berlin, 1902.

tension and relaxation of the limbs; heroic music, including *chansons de geste*, a French style celebrating great deeds, captured in a full-narrative structure of gesture, music and words (i.e. a certain reinterpretation of the triune *choreía*); early polyphony by Léonin and Pérotin, Guillame de Machaut, or Johannes Ciconia, whose fluctuations are organized by the proportion of the number and the impact of the accentuation forces of the metric stops. The necessary context is provided by the Baroque *theatrum mundi* (including the theory of rhetorical figures, *Affektenlehre*, which to this day is treated as a synonym for musical gesture), which grew out of the mannerist *horror vacui* and the cult of exaggeration, which is expressed in the ubiquitous twisting of the body and the search for the "naturalness" of forms understood as a departure from symmetry and rationality in structure. In addition, we should look at the emergence of musical theatre (including its two approaches: those of Maurizio Kagel and György Ligeti), or the more broadly developed Lehmannian relational music, which developed more broadly with the digital revolution, whose strategies of semanticisation, visualisation and performatisation (theatricalisation) will primarily benefit from the repertoire of musical gestures. It is also impossible not to take into account ritual music, in which ritual as a kind of ritual theatre becomes at the same time a space for metaphysical experiences. It is worth mentioning here The *Great Learning* by Cornelius Cardew or *Inori* by Karlheinz Stockhausen. In this context, I cannot fail to mention artists of such stature as Franck Bedrossian, Lidia Zielińska, Katarzyna Taborowska and Tadeusz Wielecki.

It is also necessary to focus on the problem of the transformation of the external into the musical, i.e. the *mímēsis* current, an adequate expression rooted in reality[438], often necessarily associated with the role of the sign in music in general, especially the mannerist postulate of *imitazione della natura* with its most primal realizations, such as Sardinian singing a *tenore*, or Inuit throat singing with later adaptations of *mímēsis* by composers of such stature as Ludwig van Beethoven, Gustav Mahler and Claude Debussy, as well as a separate and anti-mimetical understanding of the concepts – such as *concetto* and *disegno*[439] – from which today's Lehmannian concept and conceptual music will be born, i.e. a very specific form of musical idealism that is not reduced only to iconic metaphors, and which makes it possible to look at the same level of concepts in Johannes Brahms, Anton Bruckner or Richard Wagner (although criticized by Adorno for the exaggerated literalness of mimeticism), embodied in the movement of sounds as musical gestures. A special case of the mimeticism of forms, timbres (colours) and dramaturgy of visual gestures translated into musical gestures is the oeuvre of Marta Ptaszyńska, the mimeticism of the surrounding

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[438] K. Moraczewski, *Muzyka jako dziedzina…, op. cit.*, p. 131.
[439] Broader: K. Stępień-Kutera, *Bieguny manieryzmu – muzyczność i retoryka*, [in:] *Res facta nova*, 9 (18), 2007.

contemporary world in the works of Anna Zawadzka-Gołosz, Monika Kędziora, the mimeticism of technology in the form of the roar of factories in Maurice Ravel's famous *Boléro* and Aleksander Mosolov's *Iron Foundry*.

As I have tried to show, the musical gesture is deeply rooted in thinking about structure and its transformations, as in the Indian *konakol*, in which grammatical rules become determinants of dramaturgy, the transformation of temporal structures, the shaping of dramaturgy through context and difference. It is also rooted in the typologization of sound phenomena in Pierre Schaeffer's musique concrète and its reinterpretation into the field of acoustic music, i.e. in Helmut Lachenmann's musique concrète instrumentale. I also look for the search for synthetic sound structures as prototypes of gestures in Arnold Schönberg's concepts of Klangfarbenmelodie and Oliver Messiaen's related *Chronochromie*, or in serialism, which I understand as a systemic definition of the rules for generating unique, synthetic sound structures. In a way, this experiment was unsuccessful due to ignoring the grammars of listening, but this experiences laid the foundation for the concept of instrumental synthesis in spectral music and some composers working today, such as Bryan Ferneyhough (*new complexity*) or Artur Kroschel (the technique of breaking the beginning). I find concern for this synthetic sound, smoothly leading to the issues of gesture, in artists of such stature as Luigi Nono, Gérard Grisey, Salvatore Sciarrino, Barbara Buczek.

At the same time, it is impossible not to mention the wide spectrum of compositions based on preposterity, the assumption (as in Ball's texts) of mutual "commentary" on the presented reality inside the works of art through quotations, references, borrowings and mediations, shifting concepts, and thus giving rise to intertextual and surconventional art. In this sense, Bach's Fugue from *The Musical Sacrifice* on the Royal Theme, a self-quotation of the surprise theme from *Symphony no. 94* in Joseph Haydn's *Aria of the Merry Peasant* (*Spring*, *4 Seasons*), a self-quotation from the song of *Tod, wie bitter bist du* and a number of other quotations and references to other composers in Johannes Brahms' *Symphony no. 4*, Paweł Mykietyn's *Ursatz* in *3 for 13* in the style of Bach's two-part invention, or an imitation of the hip-hop style in Mykietyns *Symphony no. 3* are simply gestures, although here the syntheticness of the material results from the very fact **of integral** quotation, the transfer of current meanings there, and the creation of new meanings through the contexts of the musical work. Paweł Szymański, Ondrej Adámek, Andrzej Kwieciński, Francesco Filidei, Jonathan Harvey also deserve to be mentioned here.

Finally, I would like to mention the spatial embodiment of gestures, already present in the sound trajectories in the synagogue dialogical techniques or the topophonies (spatial music, polychoral technique) of the Venetian School. On the creation of spatial imitations

(suggestions) in Giacomo Carissimi's, expressive spatiality in Bach's *Matthäus-Passion* BWV 244, or reinterpreted in the opera's *da lontano* in the Romantics, as well as in Krzysztof Penderecki's, to end with Anton Webern's punctualism. The spatial review should be closed with a recollection of completely contemporary and complex concepts of electroacoustic ambisonic works or their acoustic implementation in the concept of Zych's *Klangraumenmelodie*. A completely new quality of gestures is provided here by the use of the *CAC paradigm*.

Of course, in order to complete the picture, one should also point to the psychological form or chain forms in Lutosławski's work, the minimalist or reductionist curling of dramaturgy "inward" in the oeuvre of Henryk Mikołaj Górecki, Steve Reich, or Galina Ustwolska (and in the latter's case, manifested even in the control of the performer's costume), the unistic processes of motion and terms, which can be grasped almost in the blink of an eye, including the rediscovery of the joy of spontaneity creation[440]. Going further, it would be necessary to mention the clearly distinguished listening "you" (known by name, surname and the reason for pointing the composer's finger at him) in the famous performative Joseph Haydn's *Symphony no. 45* in F sharp minor *"Abschieds-Symphonie"*, the ability to transform an almost (auto)erotic mood and intensity into musical motion in Karol Szymanowski's *Symphony no. 4 "Sinfonie Concertante"*, Arseniy Aavramov*'s* syncretic *Symphony of Sirens* and Andrea Szigetvári's *Beef Kohlrabi Cantata*. It is hard to forget Johannes Kreidler's *MinusBoléro*, which forces the listeners' perception to add to the melody, i.e. what is missing in the piece, Simon Steen-Andersen, who juxtaposes the real and virtual arrangements of the ensembles in his *Trio* into kaleidoscopic forms, and dramaturgy of counting as an expression in Lidia Zielińska's *Three Hundred (Trzysta)* or Boulez's open forms empowering the performer by granting him a gesture of choice.

What is the long term of the gesture? It can be said that it is very rich and abundant, especially in the context of the fact that the process of crystallization of the gesture from much more dispersed categories into the openly manifested one falls only at the end of the 20th century, and this does not even want to ignore the aforementioned Frescobaldi. The musical gesture certainly appears most clearly as a frame for Grisey's work in the score *Partiels* (1975), which I personally consider to be the first canonical gestural work[441]. Even the author's explanations section for this piece speaks of breath-hold-exhale gestures. Grisey's next work, *L'Icône paradoxale (Hommage à Piero della Francesca)* (1992-94), introduces a new understanding of the transformation of gestures from seemingly very

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[440] *Cf.* K. Szwajgier, *Obrazy dźwiękowe…*, *op. cit.*, p. 32 and next.
[441] Stockhausen's *Inori*, composed two years earlier, may also be fighting for the top spot.

distant semiotic systems (here the processual visual gestures derived from a panting and signature). At the same time, it is a time when we notice a re-evaluation of the description of motion in music. Smalley writes about gestures and textures in his canonical texts from the 1980s, while Wielecki develops and propagates his own approach to gesture in the 1990s.

Why can't it be said that the manifest announcement of gesture as a category to the world in the 1970s was a turning point in music? Because, on the one hand, Grisey himself is not at all certain in this nomenclature (dialectic *Gestalt*– gesture), and on the other hand, he does not hide the fact that he only makes a creative synthesis here: he uses the thought of Deleuze and Guattari, and indirectly Merleu-Ponty, he is familiar with Schaeffer's attitude and thinking about the morphological-dynamic-expressive unity of the sound phenomenon, its adaptation in Lahenmann position or much earlier ones, such as Hector Berlioz, who in his famous treatise on instrumentation encourages the "composing" of synthetic sound. He must also be familiar with the psychological form of Lutosławski or Stockhausen's *Formelkomposition*, which impose themselves as certain matrices of thinking about form or dramaturgy as a "microscope", a "camera" of perception, times and synthetic sound events. The same is true of the performatisation of instrumental theatre.

Due to the very assumptions of the idea of gesture, including the postulate of the compositional unconscious healed by the consciousness of the recipient, I am convinced that the use of this concept is appropriate and necessary not only in the case of "problematic" structures, which cannot be described in any other way without using the old nomenclature, which omits certain key aspects of the gestural perspective.

For the above reason, I do not believe that it would be inappropriate or devoid of cultural or historical basis to use the term retroactively in time and in relation to foreign cultural circles. I believe that in this dissertatioin I have shown that the reflection, which does not directly describe various fragments of gesture (the syntheticness of sound phenomena, perception as motion, the psychoacoustic orientation in composition of sound phenomena, mimetic forms and forms of translation beyond the sound system itself) dates back at least to the times of Plato and Aristotle, the symbolic moment of the formation of the distinctiveness and consciousness of European civilisation, and perhaps also to earlier times and other cultural circles. As long as the musical gesture takes into account primarily cognitive categories, it is applicable to every human being, in any time and place. When the understanding of the gesture narrows, requiring the naturalization of cultural categories or enculturation, the circle of its recipients also narrows in terms of time and their provenance, and consequently the universality of its use narrows.

The new research perspective that emerges from this approach is thus the analysis and interpretation with gestures of musical works that are already well known, processed and grounded in epistemological thought, although originating from more distant and closer time perspectives, as well as those mentally distant, because they come from other civilisational circles. In a sense, this gives the possibility of "correcting" and "reinterpreting" the work already known in the context of its previously ignored or twisted aspect, and at the same time opening up to completely new research horizons, in particular ethnomusicological and cognitive science. The consequences of a more widespread adoption and development of the dialectic of gesture seem to be outstandingly fruitful and encourage a fresh research perspective.

4. Grasping the gesture – the case *of Cantus in Memoriam Benjamin Britten* by Arvo Pärt

With such extensive theoretical material, proposing various ways of understanding the musical gesture and illuminating its various aspects, it is easy to get lost. The inability to draw an unambiguous and concise conclusion as to the nature of musical gestures makes it significantly more difficult to formulate such a system, let alone a uniform one. So how to study a gesture? First of all, it is necessary to implement the slogan: "nothing about music without music", which is why the explicated judgments, statements and hypotheses should be juxtaposed with their practical interpretation through the analysis of the application of the selected strategy of gesture implementation.

The main problem arises already in the pre-analysis phase, i.e. the selection of an appropriate, representative example. My aim in this dissertation was to show gesture as a very capacious paradigm, open to reconciling various positions – whether formalistic, idealistic, performative or abstract – as well as to show that both cognitive processes (embodied cognition) opposed to cultural ones seem to testify in favor of the universality of the use of gesture, both to early and recent, Western music and to the music of non-Western civilizational circles.

I think that it would be too simple a solution to deal in this analytical chapter with music, which by its creators is both directly and indirectly related to the notion of "gesture". Of course, this would be a cognitively interesting activity, often filling a gap in the literature (especially in the case of artists of the young and middle generation), but at the same time it would be a confirmation of the confirmed, without justifying the extensive use of the lexis of gestures. For the same reason, I do not consider it expedient and consistent with the set of research objectives of this dissertation to make **a detailed** aesthetic and formal analysis of *visibilium et invisibilium*. From a purely practical point of view, it should also be mentioned that this is a rather extensive, multi-layered work, in which I not only use many aspects discussed here, but also juxtapose them in contextual assamblages, which generates a potential difficulty in conducting **an explicit** description of its possibilities. I believe that I have achieved an explicit brevity of this kind to a sufficient extent in contextually commenting on the text of the description with examples from the musical work.

As I hope this chapter will show, even the analysis of the seemingly autotelic, ascetic (though strong and clear) in the structural sense of the work is the basis of *Cantus in Memoriam Benjamin Britten (Cantus in Memory of Benjamin Britten)* and so it generates many **complex** associations. Although such a choice narrows the field of view (there are no

performative elements), due to its radical approach and short duration (six minutes, in addition to a one-way process in the format of a novella), **it is explicit** as to the research goals I have set.

For the above reasons, the analysis of an example that is not obvious and at first glance far from directly gestural thinking, such as Arvo Pärt's work, will make it possible, at least partially, to demonstrate the universal qualities of gesture as an analytical paradigm and will reveal the values hidden in this work, which may have been underestimated so far.

4.1. General information

The piece was composed at the turn of 1976 and 1977.[442] and revised in 1980 and 2001[443]. Despite its title, the composer has been already writting an elegiac piece for orchestra before 4 December 1976, the day of Benjamin Britten's death, which Pärt learned of on the radio a day later and who was deeply saddened by the news, which later took on the title as an epitaph for the late British composer.

The decision to dedicate the piece to Britten is not accidental, despite the seemingly far-reaching differences between the two composers on the aesthetic, philosophical, religious, social and life levels. Pärt regretted that he had discovered Britten's music so late, not long before his death. Pärt claimed that he experienced in the Briton's music a clarity equal to the ballads of his greatest master, Guillame de Machaut, and that this was the value he himself was looking for. This clarity as a separate value seems to be the main idea adopted in this musical work, as well as in subsequent ones. The composer himself attests to this:

> "It is the clarity of the order that we all perceive consciously or unconsciously, so that it creates in us vibrations, a kind of resonance. Isn't that the mystery of music, of all kinds of music?"[444]

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[442] Originally titled: *Cantus Benjamin Britteni mälestuseks*.

[443] Among the changes: the edition of the title (*Cantus in Memory of Benjamin Britten*), the change of the expression indication for the violas from *soli* (suggesting a group of soloists within the section) to *sole* (suggesting a soloistic role of the whole group), the removal of the composer's own bowings, the change of the pitch of the bell from E to A, the removal of the *alternatim* technique (alteration of the M- and T-lines within the layer – in the original version of the work, a half of group realizes a melodic line [marked with arches], and as part of the next "rotation" of the auto-reproductive gesture, a T-line [marked as *colla parte* with square brackets] – at the same time the second part of group reverses and so interchangeably until the end of the work) by assigning specific, fixed roles to parts of groups (e.g. 1 group of violini I – M-line, 2 group of violini I – T-line, etc.), in the bell line adding 3 bars of pause after every 3 beats (within each sequence), removing the fermata in the entrance of the string layer, changes in dynamics.

[444] Restagno, E., Brauneiss, L., Kareda, S., Pärt, A., *Arvo Pärt in Conversation*, London, 2012, p. 39.

This clarity may also have contributed to the success of the work, which has been recorded unexpectedly many times, is performed often and willingly, evokes a lively response from the audience, and at the same time invites to in-depth listening due to its contemplative mood, transcendent, ephemeral character and absorbing, multi-layered processuality.

The work has no commentary by the composer[445]. The only clearly distinguished element of the semantiation strategy used in the work is its title, which on the one hand indicates an obvious *hommage*, but also a kind of self-reflection on the adopted creative direction, inspired or found in other ways in Britten's oeuvre. The second semantic resource, indicated by the title of the work, is the characteristic introverted expressiveness of the work, perhaps indicating the self-expressiveness of the artist, and further also the elegiac nature of the mood and a specific kind of sensory intensity of sound processes. The third element would be the word *Cantus*, to which I shall return later.

The work belongs to the early, though already formed, phase of the composer's minimalistic period and the use of *tintinnabuli*, the principles of which are clearly crystallized in this artistic implementation, executed with finesse, freedom and iron logic, and one may even be tempted to say that this realization is an exemplary realization, which may indicate the potential character of the work as a masterpiece. It can be summed up that this work reflects the beauty of natural expression, replicative development, proportions of numbers and economical elegance of shapes, and at the same time behind these otherwise aesthetic values there is a poignant sincerity and truth of the composer's radical attitude, both in life and in his work.

4.2. Motion-Action-Meaning of the piece

The structure of this subsection refers to the triad of layers of Godøy's gesture coinciding with Tomaszewski's triad[446] and defining the layers of interpretation of a musical work. From the latter I borrow the order in which the individual elements of the triad are discussed and the integral perspective of the work – from Godøy the order in which the layers are performed at the research levels, and from other authors the descriptions of morphology, dramaturgy, etc. The last step is to distinguish the hierarchy of gestures at the

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[445] The commentary indicated in the score published by Universal Edition is based on quotations from the composer and his wife from the book *Arvo Pärt in Conversation*.
[446] The triad synthetically presented in: M. Tomaszewski, *etacja integralna dzieła muzycznego. Rekonesans*, Kraków, 2000, p. 61; in connection with: M. Tomaszewski, *Odczytywanie dzieła muzycznego. Od kategorii elementarnych do fundamentalnych i transcendentnych*, [in:] *Teoria Muzyki*, 1, 2012.

level of the *GTTM* modified by Roy and the Smalley's typologies, and to carry out a semantic interpretation.

4.2.1. Motion

The work reveals hesychia as the dominant element of Pärt's style, it is maintained (1) in the characteristic technique of *tintinnabuli* (on the harmonic and contrapuntal level), derived from the observation of the psychoacoustic spectral properties of resonance and beats, for which the sound of bells is an obvious association, and (2) in the structure of the canon *in prolatio* (the mensural or proportional canon; at the horizontal level and at the level of temporal organization), based on the canonical juxtaposition of several layers at different speeds. Due to the strict rules of both techniques, which lead to the almost exclusion of the presence of free elements, resulting e.g. from the composer's "musicality", as well as the achievement of clarity of the layers and sound structures constructed as a result of operations with the use of these techniques, it should be considered that the composer achieves this goal.

The piece, consisting of 108 measures, in one movement, with a uniform, monolithic form, is intended for a symphonic string orchestra (rather than a chamber orchestra) and one bell. The composer specifies the duration as about 6 minutes, although the performance practice oscillates between 5'30'' and 10'30''. The tonality of the work is based on the Aeolian mode, and the meter is set as 6/4.

As far as the metre of the work is concerned, it should be noted that the successive introduction of layers of the canon *in prolatio* causes a disturbance in the sense of homogeneity of the rhythmic structure. With the initial 6/4 metre, auditorily perceived as a metre with a 3+3 bipartite pattern, the introduction of a twice-slowed second layer, perceived by the auditory as maintained in the 6/2 triple metre, distributed into two 6/4 bars, and thus perceived as filled with the 2+2+2 scheme, results in the creation of metric-rhythmic dualism expressed in the 3:2 polyrhythm. The dominant rhythmic structure is the trochaic and iambic organisation, i.e. the longer-shorter value (half-note to quarter-note) with different accent variations.

The canon *in prolatio* performed in the string orchestra is one of the two most expressive processes taking place in this work. It consists of five canonically performed layers of the voice (the so-called **M[elodyc] line** based on the self-reproducive progression of successive steps of the scale downwards) with counterpoint (the so-called **T[intinnabuli] line**, *inferiori* in the 1st position, based on the pitches of the *finalis* triad, the A minor chord). The layers correspond to each of the groups of the string orchestra: violins I, violins II, violas,

cellos (in measure 54 they are divided to distinguish violas) and double basses. It should be added that the viola layer is the only one devoid of counterpoint of the T-line. For this reason, as well as because of the addition of indicator *sole*, Hiller described the viola layer as the most subjective in the work[447].

The texture of the canon is constructed in such a way that, counting from the I violins and moving towards the double basses, each layer is introduced an octave lower and twice as long as the previous one: in this way the layer of the double basses is sixteen times longer than in the I violins.

The work does not use any other than standard performance techniques. The only difference is the use of mutes (*sordini*) in the I violins part. Perhaps this procedure was needed for technical reasons, in order to hide possible shortcomings of the uncomfortable, high skip during subsequent repetitions, or the reason was purely aesthetic, expressive, or timbral.

The second expressive process of the work is based on the construction of the canonical layers (the M-line). It is basically an auto-reproductive scale "procession" with a linearly descending outline. I understand self-reproduction here in such a way that this procession "expands" with each successive repetition by a new degree, while maintaining its *nota finalis*, the pitch with which it begins and to which it ultimately strives. These repetitions, resulting from the mathematical recalculation of rhythms, are grouped into two in which the *nota finalis* falls on the longer note value (trochee) and two in which the *nota finalis* falls on the shorter note value (iamb).

The bell part is a separate, independent, horizontal layer in relation to the string orchestra layer (dualism), as it is based on single strokes of the bell. Each cycle consists of three beats, each beat interpolated by the entire pause bar; the cycles are grouped in 11 segments separated from each other by 3 bars of pause; In the rehearsal mark 13, the bell part is paused for 21 measures.

The only element that seems to be an unspecified pre-composed scheme, which unfortunately I cannot verify without having access to the composer's sketches, is the macro- and micro-dynamic structure of the entire piece, which is contextually regulated, perhaps spontaneously, "musically", without a fixed order, often inconsistent with the musical sense perceived at first glance, such as the change of dynamics to a higher degree in the double basses in measure 28, in measure 52 it falls at the end of a phrase, or in measure 39 in the

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[447] P. Hiller, *Arvo Pärt*, Oxford, 1997, p. 103.

violin, where it falls in the middle of a phrase. The dynamics in the broad plan shows the characteristic of increasing from *ppp* to *fff*. The effect is strengthened by the introduction of the articulation of *marcato* (accent with *tenuta*) and the introduction of expressive postscripts: *molto espr.* and *(non dim.)* tags. The culmination, both dynamic and expressive, of the piece on the long-lasting chord in A minor, is its ending.

The work begins with a cycle of three bell strikes, after which the canon *in prolatio* is introduced in measure 7 (in both cases *up-beat*, not to a strong beat). The next canonical layer is entered after the half-note pause with a dot, and each subsequent layer doubles the value of the preceding layer. The double basses enter 7.5 measures after the introduction of the canon. Each "turn" of the auto-reproductive "procession" is repeated in the parts of I violins 21 times, II violins 16 times, violas 12 times, cellos 9 times, double basses 6 times. At the end of the "rotations", the individual layers "freeze" the successive components of the A minor chord in the same order in which they were introduced as separate layers of the canon.

The piece ends with the string orchestra breaking a long-held A minor chord on *fff* dynamics with a simultaneous silent (*pp*) stroke of the bell. Through this procedure, the effect of blurring the audibility of the moment of excitation of the bell (attack) is achieved, and the only audible sound after "breaking" the strings is the resonance, the reverberation of the bell, while with careful listening it is possible to hear the overtones of the bell, including the Picardy third (5th overtone), which introduces a kind of tonal dualism in A minor/A major.

Many other factors may also be analysed, i.e. the study of objectively measurable and describable orders and elements in a work, such as the application of fingering, bowing, selection of sticks, conducting means necessary to perform the score, etc. Otherwise, I do not believe that what has been achieved with relative clarity does not require further interpretation, on the contrary, everything is subject to interpretation, including reinterpretation, but for functional reasons the technical image of the piece provided is temporarily sufficient here.

4.2.2. Action

An attempt to describe the quality of synthetically understood beings in a work, i.e. its larger wholes and even entire processes striving through their motion and its quality to achieve a specifically understood goal, is always the most subjective element, because such a look inside one's individual psychophysical reactions is exposed to the questionability of sensation in intersubjective reception. So it is basically an interpretative activity, an intellectual identification and naming of the processes taking place.

Due to Herder's reluctance to systematize, I present the above interpretation here in a rather non-committal, and even more so non-dogmatic, although orderly, grouped according to the perspective of observations, divided according to their quality and perceptual feeling, as well as named and described for the same reasons. I list here many varieties and ideas of specifying gestures (which is to ensure the value of a comprehensive look at the piece – as different people could look at it), many times ascribing different descriptive perspectives to the same sound "actions". My aim is to **demonstrate the application of the reductive hypothesis and the hierarchical hypothesis** in practice, and thus to reveal a common gestural "core" in the work, even with so many scattered distinctions and understandings.

Observation / Introspection

The first illustrative listening to the work gives a sense of the uniformity of the process, its smooth dynamic gradation. The piece emerges from silence and returns to silence. Despite this monolithic nature, however, it is possible to distinguish some of its process phases:

- initiation of a process with static characteristics (bell),
- initiation of a process with dynamic characteristics (strings),
- continuous process stabilitating,
- stabilization of the process (cadence, culmination),
- unexpected process resolution.

Quantitative/qualitative method[448]

Subsequent listenings of the piece provide a detailed sound image of the phases by distinguishing a class of basic gestures, including those assembled of gestures, motions of an even lower order, emblematic for a given phase, and a quantitative, proportional characteristic of their uses:

- gesture-motion of the bell (assembled of two simpler ones: ringing the bell and responding to it with silence),
- gesture-motion of the strings (auto-reproduction, in different time perspectives, but rectilinear descending),
- *arpeggio* gesture ("the formation" of the A minor chord, the "freezing" of successive *nota finalis*),
- sostenuto *gesture* (to endure the sound, to hold back the solution),
- the final gesture (assembled of two simpler ones: rupture and resonance).

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[448] I'm omitting the quantitative method here as explained to a large extent in the section on analysis.

"Capturing" motion, imaging

This is the moment when the basic palette of gestures can be attributed with inscribing itself in a more general "motor" formation, a qualitative process of a higher order, also of less important phenomena that were not distinguished as gestures at an earlier stage. During subsequent listenings, in addition to distinguishing idiomatic gestures for each of the phases, a sense of the characteristics of the complex is also formed at a higher level. From my perspective, the most important perceptual sensations are:

    (1) Sense of spaciousness (spatial gestures):

– in physical space: carrying the canon both visually and acoustically from left to right (stereophonic effect),

– spectral density (metaphorical space): executing the canon in different time perspectives, providing the possibility of listening to individual layers; a general image of density as opaque. This impression is intensified by the "breaking through" of the *nota finalis* of successive layers, as it were, across the other layers, with some difficulty.

– spectral space (metaphorical space): the processual emergence of *nota finalis* and their descent with the simultaneous development of all the bands gives the impression of building separate local spatial plans and at the same time a wide global space (giving the impression of an "ocean", an "abyss"). The descending shape of the motion from very "high" to very "low" registers gives the impression of a metaphorical transition[449],

– the impression of space in terms of timbre (metaphorical space): the introduction of mutes in I violins, which, in addition to the timbral impression of "blurring", "unreality", "dulness", also gives a kind of spatial depth, the impression of "distance" (*da lontano*) in relation to the layers without dampers. This impression is strengthened by the order of presentation and the clear velocity difference of the first layer of the violin*,* which results in the auditory treatment of it differently, i.e. as a figure, an object, than the other layers, which would appear here as a background, a shadow of an object (cf. the zonal theory of time);

– The impression of different spaces due to the timbre of the instrumental groups: the sound of the bell, as a completely different type of excitation, continuant and termination of sound than in the string group, always seems to be acoustically embedded in a different space. For this reason, the most important gesture in the

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[449] *Cf.* H. von Helmholtz, *op. cit.*

entire work, i.e. the final gesture itself, also gives the impression of spatiality as a synthesis of two opposing families of instruments;

(2) Sense of spinning motion (*vortex gesture*):

– The mobility of the local canonical layers, which gives the impression of collapsing, juxtaposed with the static of both the bell layer, which gives the impression of stagnation in a wide space, ultimately gives an ambivalent feeling of indeterminate, wandering movement, stretchy sinking into the abyss;

– reduction of the highest bands of frequencies towards the lowest: intensified by "freezing" the faster layers (violins I, II) on the *nota finalis,* the remaining slower layers of the background (violas) up to the longest ones (cellos, double basses) intensify the feeling of being displaced to the lowest parts of the absorbing space;

– the impression of being absorbed by the longest lasting layers is reinforced by a disintegrated, split process of dynamic build-up, devoid of logical (e.g. consistent with phase, "rotation") and sometimes musical ("sensitive", e.g. measure 28 in double basses) justification;

– The auto-reproductiveness of motion in local layers ensures the synchronicity of the trajectories and their new configurations. In this sense, the spinning motion behind each revolution is both the same and different. The infinite spiral, or rather the screw, brings about the superimposition of processes at different "resolutions" of intensity;

(3) a sense of accumulation (the gesture of accumulation): it results from a continuous, linear, but dispersed in layers, gradual dynamic intensification (the effect of a fluid *crescendo*), which is simultaneously strengthened by articulation and expression (*vibrato*). Accumulation juxtaposed with random whirling motion gives the impression of contradiction, ordering chaos;

(4) a sense of stabilization through the establishment of a strong, static tonal center in the form of the A minor chord, and entropy through a "deceptive" solution and non-synchronous contrapuntal entanglements;

(5) Sense of tension-relaxation:

– global: of a higher order (increasing dynamics – tension, final gesture – relaxation),

– local: lower order (the gesture of striking the bell prolonged by resonance, auto-reproduction – the upper *nota finalis* evoke tension, the linear movement descending towards the lower *nota finalis* – relaxation),

- it is also produced at the intersection of the perception of structures as Smalley's gestures and textures: the gravitation towards static, certainty, reliability, and purposeful indeterminacy relaxes, while the gravitation towards the dramatic, unpredictable, and linear growth arouses tension.

In addition to the description of psychophysical sensations, it is good to support own impressions with an objectified presentation of the energetic and spectral shaping in time:
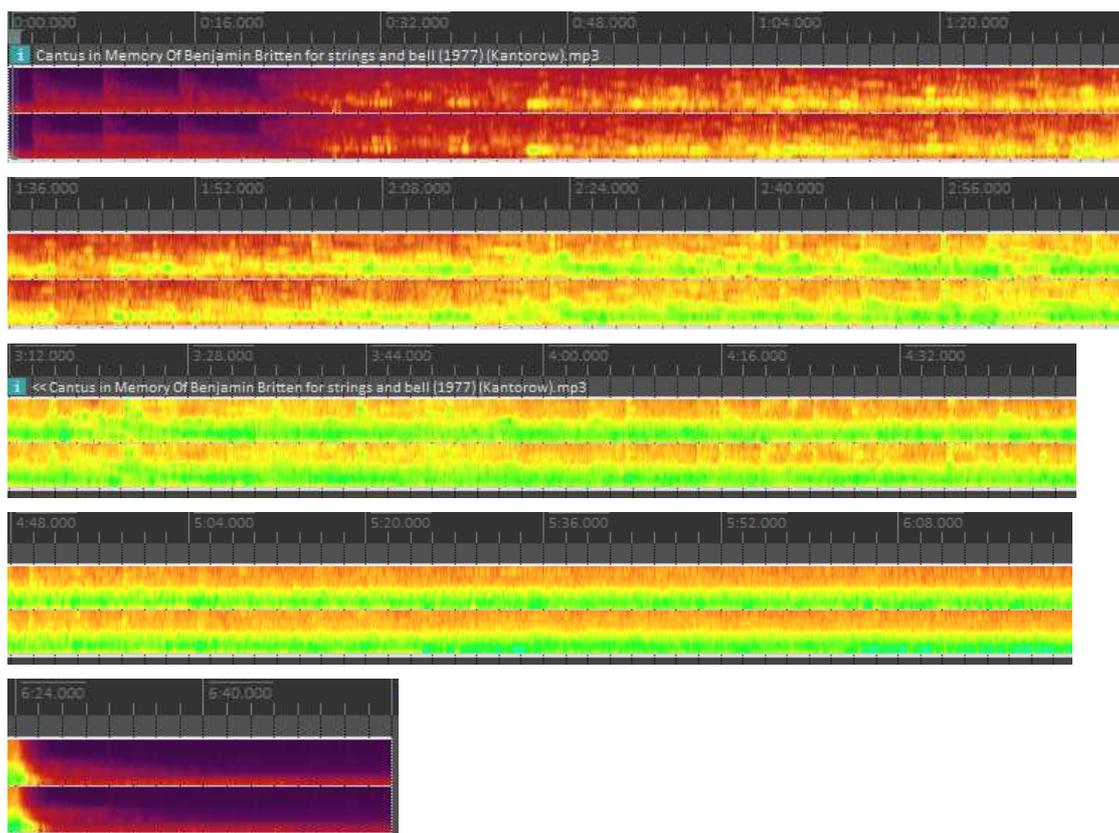
Figure. 56. Spectrogram of the recording *Cantus in memoriam Benjamin Britten*. Performers: Tapiola Sinfonietta conducted by Jean-Jacques Kantorow [in:]*Summa*, 1997, CD[450].

The image of the spectrogram confirms the perception of the five phases of the work and their character. At the same time, it allows for a visual representation of sound phenomena, which will be helpful in judging gestures of higher and higher orders. The spectrogram reveals some geometrically perceived similarities:

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[450] All spectrograms for the purposes of this dissertation were generated by myself in the *REAPER* environment. All spectrograms are based on the same recording, which is also included in Figure 64.

Figure. 57. Bell gesture. *Cantus in memoriam Benjamin Britten* (spectrogram).

The spectrogram above is a visual representation of the bell gesture. A triangular shape is clearly noticeable, corresponding to Smalley's *attack-decay* archetype: the impact and disappearance of the higher overtones to the lower ones:

Figure. 58. Final gesture. *Cantus in memoriam Benjamin Britten* (spectrogram).

The spectrogram above is a visual representation of the afterimage gesture. The archetypal construction of attack-decay is also clearly discernible.

Nevertheless:
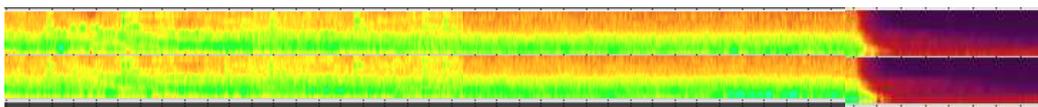
Figure. 59. *Arpeggio*, *sostenuto* and final gestures (compilation). *Cantus in memoriam Benjamin Britten* (spectrogram).

It is a compilation, an abbreviation of the *arpeggio* (accumulation, stabilization of energy levels: the shape of an inverse triangle, increasing, not reverberating), *sostenuto* (stability, homeostasis) and the final (sudden drop in energy and decay) gestures. Together, they form a higher-order structure with an *attack-continuant-decay* archetype.

Nb. the perceptual distinctiveness of the bell from string instruments seems to be confirmed by the spectrogram: they have different graphs of energy and mass. A similar difference occurs between the I violins and the other strings, disappearing around 4 minutes, from which point there is a clear skip to balance and further stabilization in *arpeggio* and *sostenuto* gestures.

I think it is necessary to make a caveat here. If we were to take an "auditory" look at the mentioned gestures, they are distinguished due to their dominance in a given phase and in the relation between the figure and the background. In principle, however, one can be tempted to reduce the actual list of lower-order gestures: looking from a certain point of view, *t arpeggio* and *sostenuto* gestures are basically identical due to Peirce's pragmatic formula, so the gesture of crystallization in A minor can be considered identical with the gesture of

crystallized A minor in the object-effect relation, i.e. the marking of a higher-order semiosis, just as the final gesture can be considered a form of juxtaposition of two gestures: attack and resonance. It is an interesting case when the inseparable sound produced from the instrument as a simple unit of the lowest order, is in fact acoustically composed of two elements: sound excitation (impact) and decay. The opposite process takes place in the perception of the gesture-motion of the bell: I distinguish it by juxtaposing two elements (the strikeing of the bell and the response with silence) as a homogeneous whole, and in this sense the whole should be "brought before the brackets", as it were. Lower-order gestures cease to be important here.

A list of basic (individual) gestures would therefore look like this:

- Bell Gestures:
    - Bell Motion:
        - the striking the bell,
        - answer with silence,
    - Final Gesture:
        - Break
        - resonance
- Strings Motion:
    - the appearance of *nota finalis*,
    - descending continuation,
- Chord gesture in A minor:
    - arpeggio *gesture*,
    - *sostenuto* gesture;

Complex (assembled) gestures (process shape):

- tension-relaxation,
- stabilization and entropy,
- Accumulation-rupture[451].

Processing and Representation

In Pärt's work, the main role is played by repetitions and the differences between them, not by transformations. Because these repetitions occur with predictable changes, I

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[451] A rupture added contextually as a complement to the gesture into a teleological larger unit.

call it replication, and in this term I deliberately refer to biology[452]. Replication here is the repetition of essentially identical material with minor changes that allow to isolate new DNA strands in reference to the matrix. Therefore, I will focus on the forms of representation, i.e. the separation of gestures due to the preservation of an iconic identity:

(1) The intuition of the triangular shapes revealed by the spectrogram can be easily verified when confronted with the score.
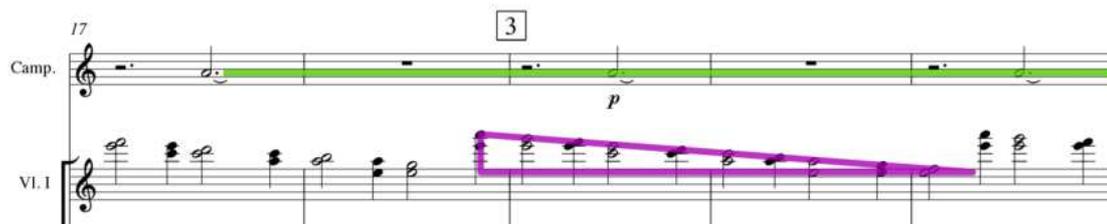
Figure. 60. Depiction of motion vectors in the form of lines and triangles. *Cantus in Memoriam Benjamin Britten,* mm. 17-21[453].
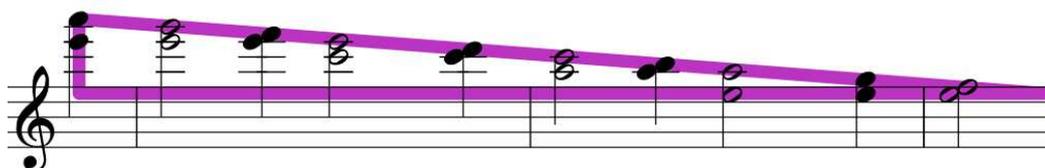
Figure. 61. The auto-reproduction triangle. *Cantus in Memoriam Benjamin Britten*, mm. 19-21.

Even a cursory, visual analysis of the score confirms that the auto-reproduction gesture is a graphic and auditory representation of the *attack-decay* archetype. The attack (the widest moment of the paratenuse and hypotenuse) is marked by a high, perceptually perceived as the center *of nota finalis*, from which the contrapuntal motion moves away, iconically reflecting the effect of resonance. This is further strengthened by the construction of a layer of two lines: the T-line as a tonal element (the audible resonance of the first six overtones of the bell), the M-line as a liquefaction, making the motion of disappearance visible (softening the "angularity" of the T-line, moving within the A minor triad).

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[452] This formulation is repeated, as already mentioned, after Szwajgier.

[453] A. Pärt, *Cantus in Memory of Benjamin Britten for string orchestra and bell (1980),* Universal Edition (EU 35 536), 2017. All the Figures concerning the analysis and interpretation of the above-mentioned work are computer graphic elaborations of my own graphs, made by Magdalena Sobolewska.

Figure. 62. Motion vectors, auto-reproduction gesture vectors, and vortex motion vectors. *Cantus in Memoriam Benjamin Britten*, mm. 1-16[454].

The score reveals something else, namely the gestural dualism between linear structures and triangular structures. Lines (the strokes of a bell, the *sostenuto* gesture) are

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[454] Vectors of motion: statics (marked in blue) and dynamics (marked in red), vectors of auto-reproduction (direction of arrows) and vortex, spinning motion (marked in yellow).

contextually given the role of a texture and background, while triangles – a gesture, a figure. A perceptual tension is created between these antitheses.

In this sense, the dramaturgy of the piece is the dramaturgy of a triangle[455], or rather of many replicated versions of two basic opposing triangles (and thus suggesting contradiction, dynamistatical quality of process). On the one hand, the whole form is organized as a constant, continuous, consistently growing process (one dynamic and articulatory triangle), on the other hand, we are dealing with a linear, but replicating instability, the excitation of tension impulses and their discharge stretched more and more in time (many tension triangles). These triangles retain their essence, but their shapes change along the elongating hypotenuse (expressive-directional) and sides (legs – opposite and adjacent: temporal and ambitus).

The motion of sounds, taking into account their registers, intensity and density, can be easily visualized by triangulation (mapping the score with triangles). Such imagery reveals several layers of psychoacoustic operations, which can also be described as gestures distinguished at different levels (hierarchical, functional, iconic). This is due to the aforementioned "triangular" construction and the fact that, despite the essential identity of the material, the piece each time leads to new juxtapositions or "weaves".

Figure. 63. Illustration of line motion vectors and different-sized auto-reproduction triangles. *Cantus in Memoriam Benjamin Britten*, mm. 17-21.

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[455] *Cf.* L. Zielińska, *Teoria trójkątów, czyli kształty ekspresji w muzyce Lutosławskiego*, [in:] *Monochord*, vol. 11, 1996, pp. 41-64. Nb. I found a similar conclusion, although discussed in a different context, in A. Jarzębska, *Wybrane aspekty techniki wariacyjnej w twórczości Witolda Lutosławskiego*, [in:] J. Astriab, M. Jabłoński, J. Stęszewski (eds.), *op. cit.*, pp. 150 and next.

This process, as I have written several times, is divided into six separate layers: five marked by successive "rotations" of the auto-production gesture and a fixed line marked by successive cycles of bell strokes. Self-reproduction is the fundamental vector of the piece, where the self-development of the linear formation of motion resembles repeated attempts, each time modified until the final achievement of its goal.

In this sense, juxtaposing the above facts with the general plan of a dramatic build-up, we get an image of the renewal of gestures, of making them with ever greater impetus and "attempt". The tension triangle captured in this way can also be externalized into the movement of human limbs. For me personally, the closest association is a dynamic throwing of the hand forward as if in a gesture of a blow and a motion back to the previous, usual position, prolonged and slowing down.

With regard to the forms of representation of sensory experiences (while maintaining a certain iconic element), other gestures should also be distinguished:

(1) *morphing* gesture ("emergence"):

- "emergence" from silence: the piece is framed by silence (written in the score), moreover, individual layers are introduced in the *up-beat*, which gives the impression that the motion of sounds "emerges" naturally from silence;
- "emergence" from another gesture: (1) the strings layer in the first two notes refers to the statics of the line marked by the repeated strokes of the bell, it is like its continuation, which transforms; (2) weaves emerge from juxtapositions of contrapuntal layers;

(2) "presence-absence" gesture, based on satisfying the psychoacoustic needs of the presence of certain sound elements (fullness of sound *vs* . "narrow" sound):

- operating the bell (medium band)-orchestra relation (utilization of all available bands in the orchestra), including by extinguishing (stopping) layers,
- quite late, only after about a minute, the introduction of the lowest band gives the impression of satisfaction of expectation,
- oscillating, playing with a sense of uncertainty, arousing the need to achieve some form of ending (and satisfying it in an "unexpected", "deceptive" way);

(3) Tension-Relaxation Gesture:

- incidental:
  - o dissonance-consonance within the layer (M-line *vs* T-line);

- some moments of the "weave", giving the impression of *a stretto* (rehearsal mark 9);
- the impression of slowing down on a micro scale (increasing relaxation):
  - by fading successive layers by stopping at *nota finalis (arpeggio* gesture);
  - through an acoustic illusion: the long-awaited *nota finalis* (tension) of the auto-production gesture occurs at ever greater time intervals, which gives the impression of "losing momentum" (relaxation);
- the impression of constant change (the expansion of the "turns" of the auto-production gesture, the juxtaposition of rhythmic trochaic and iambic orders) building tension, juxtaposed with the protence of predictable processes in the work, building relaxation;
- juxtaposing the very long, expressive and quite loud endurance of the final A minor chord (if you count from rehearsal mark 16 in the score, lasting 40 seconds) with the fleeting ringing of the bell. Inducing tension by waiting for a variation module to be completed, dissolved, or introduced. In this case, the sensational "infinity" of sound does not satisfy the need for relaxation at all, and in addition, it is "broken" in a sudden way. Only the strike of the bell, the resonance (Picardy third) satisfies the need for relaxation.

(4) "afterimage" gesture – the relation of figure to background and gesture to texture:

- higher synthesis of the final gesture. The picardy character of the ending softens the elegiac expression, the dramaticism of the minor key with the "light" of the major third. This evokes the visual experience of "the sun breaking through the clouds", of the darkness being lightened.
- Each time the relation between the fastest layer and the slower layer gives the impression that the latter are a "shadow" of dynamic movement. Using the reductive and hierarchical hypothesis, I can make another reduction of perceived gestures. The gesture-motion of the strings is thus equivalent to the structure of striking the bell (along the axis of iconicity and as pragmatically identical with the effect – the *attack-decay* archetype). On the same principle of effect, the gestures of stabilization and entropy, of rising and breaking, etc., can be reduced as effectually equivalent to tension-relaxation.

A list of basic (individual) gestures would therefore look like this[456]:

- *Attack-decay*:
    - o Bell Motion:
        - o Ringing the bell (*attack*)
        - o Response with decay
    - o Strings Motion:
        - o the appearance of *nota finalis* (*attack*),
        - o Decay
    - o Final gesture –"afterimage" gesture:
        - o Attack
        - o Resonance (*decay*)
- A minor chord Gesture (*attack-continuants-[decay]*[457]):
    - o *arpeggio* gesture (*attack-continuants*),
    - o *sostenuto* gesture (*continuants*),

Assembled gestures (process design):

- Tension-Relaxation:
    - o entropy-stabilization,
    - o accumulation-[rupture],
    - o absence-presence.

Simulation (Model)

Using Roy's notation (Chapter 1.3.3., Figure 3), I drawn down the orientation, stratification, process, and rhetorical (stable and unstable) categories.

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[456] At this point, it can already be seen that both the procedural dramaturgy of the piece and the gestures that make it up exhaust the entire Smalley triad (the cycle of the "life" of sound): attack-continuants-decay.
[457] *Decay* is added contextually as a complement to the gesture into a teleological larger unit (it refers to the figure on p. 181, showing a spectrogram of the juxtaposition of *arpeggio-sostenuto* gestures and the final gesture).
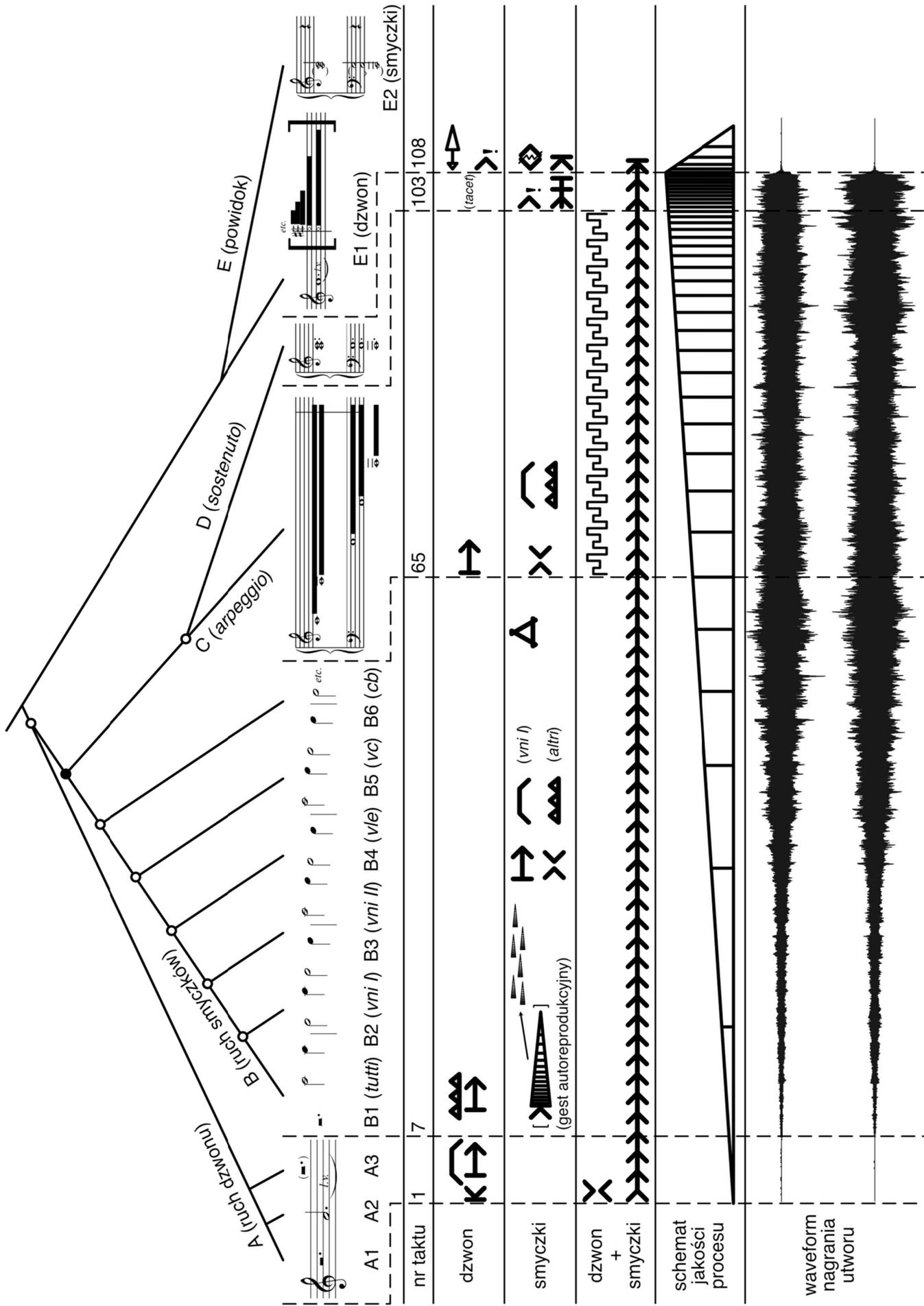
Figure. 64. Representation of the hierarchy of gestures and indicative, stratification, processual and rhetorical qualities according to Roy on the example of *Cantus in Memoriam Benjamin Britten*.

The conclusions drawn from the graphic representation of the hierarchy of gestures and the qualities ascribed to them in *Cantus in memoriam Benjamin Britten* essentially coincide with the presented description of the perceptual reception of the work (Action). At the same time, it allows us to see a number of treatments that may have seemed hidden so far, i.e. successive opposites. Thus, it can be noted, for example, that the rhetorical forms of the linguistic intonation in the opening and closing musical actions-sentences are entrusted to different layers: the first to the bell, the second to the strings, which confirms the contextual, and in fact perceptual, rotating role of the layers as figures and background. At the same time, on the one hand, the hierarchy of dependencies of the compositions of gestures, which I may call structural, is very well visible, and on the other hand, a number of gestures within the categories of process, orientation, rhetoric and stratification remain outside the hierarchy, which is why I will call them contextual gestures. In this sense, a distinction can be made between a distinctly vertical shape and a horizontal shape. According to Roy's reinterpretation of *GTTM* assumptions and to use Smalley's definitions, inference about metaphorical, symbolic and semiotic categories is a separate process from the description of perceptual values.

4.2.3. Meaning

The course of perception ends with interpretation, i.e. the processes of (re)constructing meanings, both subjective and intersubjective. The interpretation of cognitive categories ended with a relatively clear picture of the hierarchical structure of gestures, their composition into higher-order units, and their reduction to archetypal forms and their potential sources (cf. substitution, mental imagery). At this stage, they are assembled not in terms of psychoacoustic aspects, but semiotic, setting experiences in reference to other experiences and systems (grammars, dictionaries), including the attribution of meanings.

Perception (Inner Meaning)

This aspect can be determined through a detailed analysis of the function of gestures within the system (grammar) of the work, establishing their relations and hierarchy. An element of this is the further reduction of perceived gestures due to the closer or more distant, iconic or metaphorical functional connection between gestures and psychophysical archetypes.

A list of types of basic (unitary) and complex (process) gestures would be as follows:

- *Attack-decay* = tension-relaxation
- *Attack-continuants-[decay]* = tension-hold-[relaxation]

At this point (at this morphological stage) I arrive at a functional duality of gestures.

Reference and interpretation ("modulation" meaning, external to the sign system)[458]

The non-systemic interpretation of the observed phenomena illustrates well the smooth transition between intra- and extra-systemic references. When I mentioned triangles, I deliberately omitted one of the conclusions of Zielińska's reflections, who, while describing her references in perceptual rception, describes the musical results of shapes corresponding to the auto-reproduction triangle as elegiac, and the musical results of shapes corresponding to the dramaturgical triangle as optimistic[459]. In this sense, I not only ascribe iconicity or metaphorical iconicity to the similarity of phenomena, but I transfer them metaphorically to a higher level of complexity. This time, my conclusion of the previous chapter will introduce the continuation of the considerations.

One of the platforms connecting the individual elements and compositions described above in Pärt's piece is the introduction of the category of dualisms. I'll list a few that seem to me to stand in opposition to the monolithic form of the work: tonal dualism (A minor/A major), metrical dualism (both as 2:3 polyrhythm and *down-beat - up-beat* relation), rhythmic dualism (trochaic and iambic orders), pulse dualism (the "slowing down" canon, "collapsing tempo" *vs*. the steady strikes of the bell), layer dualism (the voice of the M-line, realizing only melody *vs*.the counterpoint of the T-line, realizing only chord-based pitches), the dualism of horizontal layers (bell *vs*. string orchestra, triangles *vs*. line), dualism, the sound separation in the finale (the breaking of the strings as an "object", the reverberation of the bell as its "shadow"; the "freezing" of the chordal pitches and its ephemeral "extinction"), the dualism of generative (algorithmic, structuralist) elements juxtaposed with the free (arbitrary, "musical") elements, the dualism of elegiac and optimism, and finally the dualism of tension-relaxation and tension-holding as the two main gestural categories of the highest order, or almost, because I think that the highest order is the work itself as a whole unit and the gesture that the composer wants to make with and through it.

This dualism is one of the ideological foundations of hesychia present in Pärt's mystical compositional technique, which is supposed to symbolize the spiritual dualities combined in one man: mortality, transience, changeability juxtaposed with an eternal, established order. The composer himself describes it as follows: the M line "always signifies the subjective world, the daily egoistic life of sin and suffering", the T line "meanwhile is the

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[458] This branch is basically the last point of distinction for Godøy's ways of studying gestures.
[459] L. Zielińska, *Teoria trójkątów…*, *op. cit.*, p. 58.

objective realm of forgiveness".[460] This dualism is transcended by the unification of opposing elements in a single form and a uniform process, just as man unites body and soul, so it is a clear reference to Augustine's theological thought (including the theology of visibility and invisibility) as well as aesthetic thought (the proportion of numbers, *scientia bene modulandi*).

There are many elements in the work that can be interpreted using a rich treasury of established rhetorical figures, affects, and musical symbolism: Wolfgang Caspar Printz describes the aeolian mode, the only one used in the work, as a "nice and somewhat sad" scale, while Johann Mattheson describes the affective tone as "somewhat regretful, venerable and calm, inviting to sleep, but not unpleasant"[461]; Elsewhere, the features of the mode are emphasized, such as: femine, grace, delicacy, soothing abilities, mixing pious feelings with pious resignation, the best effectiveness in exposing silence, melancholy[462].

The adopted 6/4 metre (due to the stratification into duple and triple, which also results in a rhetorical difference: duple is treated as joyful, the triple at least as serious, if not sad) and the characteristic half-note-quarter note rhythm (iamb and trochee are perceived as joyful, dance rhythms due to their iconic association with the human figure swaying also to the rhythm of dance) bring to mind, on the one hand, the step of *conductus funebris*, but also *hoquetus techniques* through the iconic mediation of appearance, rhythm and posture configuration of the sobbing person, symbolizing crying, sobbing. The Picardy ending of the piece, as I treat the audible 5th overtone of the bell, is also traditionally associated with the optimistic, hopeful ending of the elegiac dramaturgy of the work.

A number of other figures known from the theory of affects can also be distinguished: *anticipatio* (the advance of the consonance in the crystallizing chord in A minor weakens the target consonance), *ἀποκοπή [apokopḗ]* (the incompleteness of the theme expresses truncation, incompleteness), *ἀποσιώπησις [aposiṓpēsis]* (rupture), *asimilatio* (similarity), *climax* (succession of successive steps of the scale as a ladder), *ἔλλειψις [élleipsis]* (dissonance is resolved not by consonance, but by pause, which expresses abandonment, change of direction), *exclamatio (nota finalis* as an exclamation accentuated by a wide leap), *fuga imaginaria* (pomposity, solemn eloquence), *ἔτερολῆψῐς [héterolêpsis]* (intersection of voices by their transgressions beyond the upper limit [*ὑπερβολή [hyperbolḗ]*] and beyond the lower limit border [*ὑπόβολή [hypóbolḗ]*]), *interrogatio* (a question suspended on a [sortof] dominant, symbolizing the lack of answer, its rhetorical nature), lines *κατάβασις [katábasis]*

[460] P. Hiller, *Arvo Pärt*, *op. cit.*, pp. 96-97.
[461] A. Kisiel, *Koncepcja retoryczna „Pasji według św. Mateusza" Jana Sebastiana Bacha,* Poznań, 2003, p. 101. [translation after Kisiel done by myself].
[462] M. A. Ishiguro, *The affective properties of keys in instrumental music from the late nineteenth and early twentieth centuries*, 2010, p. 49, [unpublished yet].

(the sensation of descending, falling, dying[463]), *mutatio* (difference, contrast) – *per systema* (registers, bands), *per motus* (tempos), *νόημα [nóēma]* (polyphony and homophony), *παλιλογία [palilogía]* (repetition as an expression of assurance of something), *πολύπτωτον [polyptōton]* (repetition in octaves as an expression of distraction), *repetitio* (repetition, attempt to achieve a result), *suspiratio* (sighs), *tenuta, prolongatio* (as a symbol of eternity, but also of sleep), *tirata* (as a particular interpretation of the bell's rapidly disappearing overtones, symbolizing tearing, released arrow from the bow).

The quoted qualities and meanings represented by the figures indicated may specify the composer's intentions, they also very clearly suggest associations and the interpretative path, and in any case they certainly constitute an adequate description of the processes taking place in the work. Every figure of speech, due to its iconicity mediating the metaphorical nature of communication, expressed in conventional dictionaries, is ultimately a gesture. Nb. the multitude of rhetorical figures that can be attributed to the sound actions in the musical work corresponds to the multitude of gestures that were distinguished as potential, hypothetical interpretations of sensations in the previous section.

However, I don't have to distinguish the symbolism by using only *Affektenlehre*. However, attention should be redirected here to the symbolism of the bell, for example. It carries with it a dialectic traditionally associated in the West with death or transience, probably due to its solemn, serious, transcendent sound, ritual and religious practice of usage, as well as the structure in which the value of resonance is exposed. For the believers of the Eastern Church, such as the composer, the sound connotations of the bells are slightly different: as in the Western Church, the Orthodox use bells on the tower and liturgical bells, used for worship, used in specific rhythms and tempos, i.e. in conventional patterns with fixed theological interpretations, indicating, for example, the form of the service, the period of the liturgical year, and during the period of penitence (lent) replaced by silence or wooden raganellas (fast for ears) etc.

At the same time, as I have shown, the composer also established new symbolism of bells along the mimetic perception: their swaying rhythm, descending structures framed in triangles, corresponding to the envelope of the bell's sound, may resemble the experience of ringing bells placed in different topologies, observed from a single point (polyphony), but also observed on a single tower in the context of their movement, when the small ones move

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[463] At the same time, these contextual distinctions are preserved, for example, in the French language (similarly to the English language) – one can fall, collapse, fall down, drop (*tomber*) but also fall in love (*tomber amoreux*). There is no difference between most rhetorical figures of speech (in polish: "środki artystyczne", "środki stylistyczne") expressed in language and musical means. Intuitions expressed by sound signs can also be found in languages.

quickly, the larger ones longer, bells such as the *Zygmunt* Bell or *Tuba Dei* the longest. Thus there is a parallel to Grisey's scale of time: the time of human (I violins) and the time of whales (II violins, violas, cellos, double basses).[464] Less perceptually intuitive would be the following thinking: if we treat the viola as an "objective" *cantus firmus* – then the I and II violins are kept in the time of birds (or insects), the viola – in the time of humans, and the cellos and double basses – in the time of whales. At the same time, in relation to bells, the process of building the culmination and ending can be considered as a reflection of the actual process of the bells ending the ringing, their slowing down, leading to the extinction of their sound.

Very characteristic is the afterimage gesture of the bell, used at the very end, and composed of two elements: the acoustic ("visible") tone of the strings, and having a certain dimension of "invisibility" resulting from the laws of physics and objectivity of the resonance revealing the harmonic series of the bell. As I have already mentioned, I think it is safe to assume that the composer started with the gesture of the bell as a consequence of *attack-decay* when constructing a piece conceived as an elegiac work even before Britten's death, adapting subsequent means of expression and technically organizing the structure of what the gesture of the afterimage prepares and introduces. Without this gesture, the idea of the previously derived structural operations seems to be devoid of punchline and weight[465]. This afterimage gesture can be interpreted in different ways, and I am personally convinced by two explanations. This would be a severance of communication between the layers that have so far existed together, although independently of each other. The sound of the bell is "mutilated", perceptually devoid of attack, which can also be expressed using Grisey's nomenclature[466] as arousal (birth), duration (aging), with only reverberation and extinction (death) ultimately left. The above processes can be explained (1) as a metaphorical representation of the separation of soul and body at the moment of death, or (2) as a metaphorical representation that despite a sudden rupture, i.e. the end of life (the physical substrate, the string orchestra as an "object"), the memory, the soul (reverberation, resonance, "shadow" of the object) remains and endures.

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[464] That is why the relation between I violins and the rest of the string orchestra can be described as a relation between figure and background: when listening to the successive layers, it is easiest to "pick out" the I violins; sometimes the ear is forced to see "clearances" in the places of interweasing, as in the two measures before rehearsal mark 6.

[465] The composer's wife, Nora, also notices this fact: "The last chord of *Cantus* refuses to end; it stays there, without increasing or diminishing. It is something achieved and which no one wants to give up. **The substance of the entire work strives toward that point**." E. Restagno, E., Brauneiss, L., Kareda, S., Pärt, A., *Arvo Pärt in Conversation*, *op. cit.*, p. 39. Emphasis added.

[466] *Cf.* G. Grisey, *Muzyka: stawanie się dźwięków*, [in:] *Res facta nova* 11 (20), Poznań 2010.

A reference, quotation, genre or style reference can also be symbolic. In *Cantus in memoriam Benjamin Britten* can be distinguished both (1) **Style Indicators**, which are traditional, canonical, polyphonic (*Cantus firmus*) the formation of the layers characteristic of Western culture since the time of Léonin and Pérotin, as well as (2) **Synecdoche of genre**, i.e. the use of the bell and polyphonic techniques as an evocation of (a) the ecclesiastical and sacred style (Palestinian, potentially "alien" to the man of the 20th century), (b) juxtaposed with a "modernist" reinterpretation of them in terms of sound (modernisation) and (c) in terms of a certain disorder of the process, which is ordered not harmonically but processually, striving to arouse maximum tension.

The very establishment of objectified, algorithmic "speculations" as superior, operational-based intellectual modes of organization in a work is in itself symbolic. This expresses a kind of homage to Augustine's thought, or to Boeotius' spherical conception both in terms of distinguishing between audible and inaudible acoustic categories, sphericity as a kind of gravity of various categories of sound, as well as the search for harmony as the coexistence of body and spirit. We can also look for many other layers of meaning, e.g. such as the symbolism of numbers and proportions.

By operating with dualisms on so many levels, Pärt seems to be expressing some theological truth, if not a general humanistic or metaphysical one. Due to the composer's religiosity and attachment to Christian values, I have taken the liberty of choosing fragments of Psalm 30, which corresponds to the structure, expression and meaning of the piece:

> "I praise You, Lord, because You have saved me (…) My Lord, my God, out of the land of the dead You have brought my soul and saved my life from among those who go down to the grave. (...) Y**ou have turned my mournful lament into a dance** (...)."[467]

In this quote, the last riddle of the discussed work, i.e. the title *Cantus,* is solved. This reference is probably expressed in the *cantabile* value of the polyphonical layers, its scale progressions, expressive rhythmic and dance contours, but also in the archetype of *cantabile* and clarity, which Pärt found in the style of de Machaut or Britten. It is also expressed in reference to the rich history of the elegiac style as the first and foremost genre of the funeral song, in the current of which many works by the most outstanding composers were composed. It is expressed in contradiction with the sound "content" of the piece, in which there are no words or singing. It expresses itself in polyphonic layers, which can be

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[467] Ps 30:2; 4; 12-13; *Psalm 30*, transl. L. Stachowiak, A. Jankowski, [in:] *Biblia tysiąclecia*, Poznań, 1999. [translation after Stachowiak done by myself].

compared to Grisey's times of birds, humans and whales singing. It is expressed in reference to the name of one of the polyphonic techniques – *cantus firmus*. But it is also expressed in the fact that Pärt's plausible theological interpretation can present the whole of human life in all its aspects as one that constantly raises a song in praise of the supreme and most perfect Creator, who understands all creative orders.

In this way, Pärt makes a gesture of synthesis of dichotomy, of combining everything into one organism[468]. And as numerous as the dualisms will be, so will the syntheses – of the bell (super-stable in terms of material and form, though rough, metallic) and the strings (materially and formally unstable, though soft, velvety) layers; T-lines and M-lines as inseparable, processual lines that make up a single layer; distinct, discrete process phases seamlessly morphed into a single monolithic whole.

> "It is astounding that a musical work like this is possible, simultaneously active and
> still, simple and complex, naive and profound. But with Pärt's language and sensibility,
> this is all possible."[469] [470]

4.3. Observations in the margins of the analysis and interpretation of *Cantus in memoriam Benjamin Britten*

Only a very thorough analysis and interpretation of the piece in terms of the presence and quality of gestures revealed a number of problems. It can be said that this work is almost made for this type of analysis and interpretation, because virtually every element in it is

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[468] Nora, Pärt's wife, even sums up the syntheticism of the voice M and T as an equation 1+1=1; P. Hiller, *op. cit.*, p. 96.

[469] A. Marx, *Sublime Stillness, Day 3 – Bonus Double Post Cantus In Memory Of Benjamin Britten by Arvo Pärt And Symphony No. 3 by Henryk Gorecki,* 06.04.2016, [source:] https://smartandsoulfulmusic.wordpress.com/2016/04/06/sublime-stillness-day-3-bonus-double-post-cantus-in-memory-of-benjamin-britten-by-arvo-part-and-symphony-no-3-by-henryk-gorecki/ [accesed: 01.05.2023].

[470] This is how this interpretation *of Cantus in memoriam Benjamin Britten* could end, based on both theoretical and musical and humanistic methods. Of course, the adoption of these methods results primarily from noticing the strategy of semanticization adopted by the composer in shaping the communicative character of his work, although other paths of its development are also possible, examples of which I will briefly enumerate. Of course, it is possible to examin pitch, harmonic, contrapuntal or topological parameters in a continuous number and on their basis to carry out statistical research, graphic mapping, but also to generate further data based on them. It is possible to study changes in the body of the recipient and performers with the use of medical equipment that would capture, for example, brain waves and the general activation of certain areas of the brain, or others, e.g. thermal or chemical changes in the body, and compare their course with the course of the piece. Cultural and sociological statistical studies can be carried out in terms of who, how and what hears depending on competence, provenance, enculturation, etc., or attempts at objectification, e.g. by drawing curves, as in the case of Truslit, and studies of the diversity of references in intercultural relations. One could study the work from the perspectives of biologists, physicians, psychiatrists, mathematicians, etc., which would certainly reveal further layers of gestural internal and external relations. An example of such an analysis is a study in terms of revealing the proportions of the "golden mean" in a work. *Cf.* A. J. Ballinger, *'Proportion Canon and the Golden Mean in Arvo Pärt's Cantus in Memory of Benjamin Britten',* [in:] *Internationa Journal of Humanities and Social Science*, vol. 7, no. 5, May 2017. **Each of these sciences has its own system of signs, contexts enabling the push of infinite semiosis into completely different areas.**

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gestural, or at least encourages gestures. Below are some additional conclusions resulting from the above.

(1) In contrast to Pärt's piece, finding gestures can be much more difficult in many other works (veiled gesture). **Gestures, being essentially immaterial, although expressed in a material (physical) form as sound or physical movement, or causing *quasi-material* effects, including psychophysical reactions,** do not depend on the score, nor on hearing or perception itself, nor on objectified research. All of the above, and many more elements, must be treated together.

Hence the difficulty of capturing and effectively creating gestures, which is exacerbated by the fact that one gesture sometimes results in very complex networks of others, correlated with each other. Assuming that the reductive hypothesis is true, the initial history of gesture semiosis can be traced quite easily, but the multi-layered combinations of gestures make it impossible due to the direction and individuality of reception (especially the metaphorical nature that increases with the level). This also confirms the hierarchical hypothesis, and the feedback between the two hypotheses.

(2) The processuality of gestures does not consist in their transition or shifting from one point to another (script execution), but it is **a multifaceted, qualitative figuration with internal and external vectors** (morphism). The gesture can therefore be easily lost if any of the smaller elements become deformed[471]. For example, the too loud strike of a bell, heard in advance before the gesture of breaking, destroys the entire impressionistic effect of the afterimage gesture. The reading, I believe, in accordance with the composer's intention, and described in this work, reaches about one out of twenty compared recordings[472]. Hence the conclusion that almost half of the recordings lost the quality of the gesture, blurring or preventing full "access to the presented world", and thus interpretation by the audience.

(3) analysis of *Cantus in memoriam Benjamin Britten* revealed **the fluidity of transitions between types of movement (motion), gestures, between signs, between meanings, and thus the extensibility or flexibility of gestures in general**. Pärt's clarity is not only the clarity, the readability of the algorithmic structure of canonical polyphony, but also the way in which the message is expressed through the structure.

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[471] However, this deformation leads to the development of a new gesture.
[472] Among the recordings that realize, in my opinion, the composer's intention is particularly those conducted by m.in. Edward Gardner, Ola Rudner, Jean-Jacques Kantorow, Paavo Järvi (although not in all of his recordings of this work).

This is where the communicative openness of the system lies: certain facts and ideas are communicated "objectively", without forcing the recipient, if he or she does not want to, to ascribe meaning to them, in so many fields discussed in the work. In this sense, the "softness" of the strings and the "metallicity" of the bell can be treated in terms of meaning, e.g. as a juxtaposition of the dualism of the orders of sin and grace (as the composer would have it), or simply as a reference to the communities of tactile experiences.

It is often the case that the very naming of gestures already gives rise to the impression that it implies semanticism. In Pärt's case, the further deflection of semiosis and the reading of dualistic orders interpreted as representations of sin and grace can result almost exclusively from the knowledge of his technique and the writings concerning it. However, this does not prevent us from noticing that such dualisms exist, it does not invalidate the determination of their nature, "grammar" and general perception of them as the motion of sounds. In the above sense, there is a shift in the rules of the sense of reading gestures. The higher (metaphorical) assamblages reveal the true meaning of the lower (more concrete) ones and allow for an accurate reconstruction of the composer's intentions and the possibility of attributing to them the feature of relationality in the semantic field.

In this piece (concept music), in which sound structures are clearly the medium of expression of the composer's concept, a semantic strategy is implemented above all at the level of the title, but also at the level of the entire process and the gestures that make it up.

In this way, the blurring of the line between knowledge and experience becomes perceptible. The piece evokes a psychophysical reflex in me in the form of a sense of collapse (signal). And this, in turn, makes me reflect (symbol). This reflection, then mediated in the expression of the work, suggests to me directly (iconically) what is also communicated to me, albeit indirectly (metaphorically) by mediating in the symbol. The latter is a matter of mediation in dictionaries of symbols, conventions, systems in which my participation is required (thanks to this, I will see the similarity of the structure of the bell's gesture to the symbolism of death and the passage of life, which shifts my perception of gestures as identical to an even higher hierarchical level in relation to more "mundane", iconic patterns).

(4) At a certain point, the interpretative process lowers the complex value of the gesture: the semantic analysis has pushed the gesture onto the cultural tracks, a situation from which it is not easy to escape. In this sense, the gesture is more satisfying at the level of describing the perceptual experiences themselves, as it were, "speaking without speaking". **Domestication in convention, meaning, language, and culture becomes the imposition of a straitjacket, a uniformity** resulting from the game of the deaf telephone mentioned earlier in this dissertation.

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Comprehensibility, clarity, even if not fully conscious, the clear cultural self-imposition of the reflexive understanding of meanings expressed in symbols is a fascinating feature. However, when one try to describe it in words, it comes off poorly, it weakens the value of these experiences, it sounds naïve. Semantic interpretation directed and narrowed the feeling to a single path, while perceptual analysis and interpretation opened up many possibilities (which, however, could be reduced to basic, archetypal forms by the semiosis, sign operation). This, I believe, is the Herderian distinction between maintaining an objective structure, but also the necessity for the translator to go further in his analysis and interpretation. The thin line between what is interpretively objective, and thus probably intended by the composer, measurable, tangible, and what is subjective, i.e. dependent on one's own perceptual image, does not make this task any easier.

At the same time, it is only the possible versatility of the shot that reveals the nature of the gestures. Penetrating into various types of contextually fluid meanders of morphology, structures and perception of reception convinced me that the iconic-metaphorical arrangement adopted by Pärt in the work should refer more to the representation of human life by means of the metaphor of ringing bells, than that it is any other iconic-metaphorical representation.

(5) From the foregoing considerations another conclusion can be drawn: **the gesture spherically permeates and surrounds reality, both represented and actual, and has everything it needs to be able to include it in the imagination**. At first glance, it can be said that in Pärt's piece we are dealing with an autotelic work, and it is only when we penetrate the contexts of creation and technology that we become aware of its heterotelic nature, and finally in the perception itself we obtain a true polyphony of both experiences and meanings confirmed on many levels. The possibility of perceiving the internalization of external phenomena into musical phenomena and the externalization of musical phenomena into external phenomena is not only the creation of a mental shortcut through which one has access to concepts, but can also resemble the experience of building a coherent world, as in Bruckner's category *Ur-Nebel*, where the world separates itself from the darkness of the primeval fog[473].

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[473] B. Pociej, *Symfonia*, [in:] *Ruch Muzyczny,* XXXI, No. 5, 1987.

Conclusion

Conclusions of the analysis Arvo Pärt's *Cantus in memoriam Benjamin Britten* almost self-arranged statements about Gilles Châtelet's gesture. There is a great convergence between the intuitions I have included in this paper and the author's statements, which is illustrated by the following excerpts from the book *Figuring Space*.

- "The gesture is not substantial: it gains amplitude by determining itself. Its sovereignty is equal to its penetration and that is why we refer the gesture's 'accuracy': the precision of the strike is proof of the reverberation of its skill. The gesture inaugurates a family of gestures, whereas the rule only enunciates 'instructions', a protocol for decomposing the action into endlessly repeatable acts. The gesture possesses a historical exemplariness: if one can speak of an accumulation of knowledge over the course of successive generations, one should speak of gestures inaugurating dynasties of problems;

- The gesture is not a simple spatial displacement: il decides, liberates and suggests new modality of 'moving oneself'. Hugues de Saint-Victor defined the gesture as 'the motion and figuration of the members of the body according to the measure and modalities of action and attitude'. The gesture refers to a disciplined distribution of mobility before any transfer takes place: one is infused with the gesture before knowing it:

- The gesture is elastic. it can crouch on itself. leap beyond itself and reverberate. where the function gives only the form of the transit from one external term to another external term. where the act exhausts itself in its result. The gesture is therefore involved with the implicit pole of the relation;

- The gesture envelops before grasping and sketches its unfolding long before denoting or exemplifying: already domesticated gestures are the ones that serve as references;

- a gesture awakens other gestures: it is able to store up all the allusion's provocative virtualities without debasing it into abbreviation.[474]

I relate the way of thinking outlined here in terms of Peirce's semiosis and his pragmatic maxim to **the reductive hypothesis I have adopted**, thanks to which whole families of gestures can arise on the basis of the core of archetypal and most primitive psychophysical experiences. This hypothesis, supplemented by **the zonal (hierarchical) hypothesis**, would confirm the generative nature of gestures as such, which can be generated *ad infinitum* and hierarchically organized. Developing the conclusions of this dissertation could thus form the basis for the construction of a new general generative

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[474] G. Châtelet, *Figuring Space. Philosophy, Mathematics, and Physics*, transl. R. Shore, M. Zagha, Dordrecht, Boston, London, 2000, pp. 9-10. Footnotes in square brackets own.

musical grammar based on gestures. At the same time, I maintain the statement that gestures do not have their own strict catalogues or histories, although they allow us to penetrate some of their regularities by learning the grammars of composition and the grammars of listening.

Maciej Zieliński, an eminent theoretician and philosopher of law, once presented[475] his concept of the ontological nature of the legal system in passing through the metaphor of a jigsaw puzzle that has already been put together, but with the image facing down. By taking out one of the puzzles, the participant of the system receives a fragmentary image, can put it down and choose the next one. The next step will be an attempt by the participant to mentally visualize the puzzle locations that he or she has already discovered, and then an attempt to reconstruct what may be represented by a hidden, and in addition dynamic, constantly transforming image.

Musical art as a field of culture is a similar system, but it is also a field of sensory experience. The gesture transcends these opposing categories. The gesture seems to provide an answer not to the question: "How?", but to "Why?"[476] and to reveal to the viewer at least some of the above-mentioned ontological puzzle references. At the same time, it is a way to implement Grisey's postulate: "No more composing with notes, time for composing with sounds",[477] supplemented by Kreidler's: "I no longer compose with sounds, but with music".[478] Gesture is, in my understanding, what Lachenmann encourages when he says:

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[475] On 24 June 2014, during the conference *Wykładnia Konstytucji: praktyka i teoria*, dedicated to the person of Sławomira Wronkowska, and held at the Collegium Iuridicum Novum in Poznań (Faculty of Law and Administration, Adam Mickiewicz University). In his speech, Zieliński referred to his own, unique, derivative concept of the interpretation of law – and having its roots in Chomsky's thought – as a process of getting to know the deep structure of law (legal norms), which the legislator expressed through the expression in legal provisions that form the surface structure of law. From this point of view, the maxim *omnia sunt interpretanda*, associated with this Poznań-Szczecin derivative concept, and attributed to Zygmunt Ziembiński, is contrasted with the erroneous maxim *interpretatio cessat in claris*, associated with the Warsaw School. Hence, the musical gesture, read in the spirit of Chomsky's generativity, will always demand a constant repetition of interpretation, even if there seems to be a general clarity about the interpretation of musical works. *Cf.* M. Zieliński, *Wykładnia prawa: zasady, reguły, wskazówki*, Warszawa, 2017.

[476] Many years ago, Górecki appealed for a paradigm shift in the paradigm of the question by music theoreticians and musicologists in this form, which was important to me and deeply engraved in my memory, although while working on this text I was unable to find the source in which the composer's observation was made. I found in this place a statement quite close in spirit to that one: **" I see how the music is made, I see its individual elements, but I don't know where it came from or why [...] I want to see the world with my own eyes, not someone else's."** *Cf.* H. M. Górecki, *Powiem Państwu szczerze*, [in:] *Vivo*, 1, Kraków, 1994, p. 44. Sometimes, too, he was less explicit in his appeal to compose "music, not notes." Bruner says the same thing: "There is something antic about creating, although the enterprise be serious. And there is a matching antic spirit that goes with writing about it, for if ever there was a silent process, it is the creative one. Antic and serious and silent. **Yet there is good reason to inquire about creativity, a reason beyond practicality, for practicality is not a reason but a justification after the fact. The reason is the ancient search of the humanist for the excellence of man: the next creative act may bring man to a new dignity**", J. S. Bruner, *op. cit., p. cit.,* p. 34. [translation after M. Popova].

[477] Grisey, G., *'Les Espaces acoustiques'*, [in :] G. Lelong (ed.), *Écrits ou l'invention de la musique spectrale*, Paris, 2008. [translation after Lelong done by myself.]

[478] J. Kreidler, *Muzyka z muzyki*, transl. Monika Zamięcka, [in:] *Glissando*, No. 22, 2013. [translation after Zamięcka done by myself].

"To compose means to build an instrument",[479] or what remains of the operation to which Filidei inspires to imagine such music that has "lost the sonic element".

The means used to study gestures (topological diagram, score, spectrogram, study of brain and bodily functions) can "freeze" a gesture long before it becomes a sign perceived by the mind[480]. In this sense, as Châtelet writes, it implies a "new way of moving" between different types of space (visual, sound, virtual or mental), **transcending the Cartesian division between matter and spirit, mind and experience.** As a presemioticist, Châtelet explicitly opposes the semiotic source of gestural expression: "The referential arrow of pointers that characterize semiotic signification are not yet activated, gestures do not hit and prick their targets, but envelop and sketch. They are ontological sketches of processes and facts."[481] All this makes the gesture more like a living being, or even society, than strictly to the structure that represents it. Hence, the unity of gestures, their meaning or power is not disturbed, but – on the contrary – it is enriched by transdisciplinary **translation between different systems of signs, i.e. intersemiotic translation**.

Reading Châtelet's statements in the context of this dissertation as a whole, I have a strong sense of the fulfillment of the research assumptions that are at its origin and at the same time open up to further research.

First of all, in my opinion, the proposed **definition of gesture** meets the current diversification of the meaning of this concept into four paradigms of understanding gestures, and at the same time fits into the recognized tradition: from the considerations about gesture in Hugues de Saint-Victor to his ideological successors. I understand my role in this new proposed definition as conciliatory, adaptive to the areas of application of the concept that I have observed. I can only hope that flexibility as a general feature of gesture has also affected my definition of it. Gesture is treated here very broadly, and yet the weight of countless gestures is manageable thanks to the hierarchical and reductive hypotheses mentioned above.

Secondly, the interpretation of the gesture takes place in various categories. The basic categories of movement and meanings are taken into account as culturally naturalized, i.e. functioning in a symbolic order. We are also talking about the categories of psychophysical experiences as well as practices. Such a broad perspective **makes it possible to define the scope of application of this concept in time and space as universal**.

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[479] H. Lachenmann, *O komponowaniu*, transl. M. Hermann, [in:] *Glissando*, No. 4, 2005, p. 39.
[480] *Cf.* G. Mazzola (ed.), *op. cit.*, p. 862.
[481] *Ibid.*, p. 863.

The oft-mentioned transgression of Cartesian dualism seems to ensure the effectiveness of the communicative value of the gesture, which can be read by recipients of different epochs and civilisational circles. The need for a "sound myth"[482] expressed through synthetic sound structures suggests that these claims may be supported by evidence, although this will require extensive institutional research. Musical gestures can be understood as just such a phenomenon of a synthetic nature, not only because of their multi-layered value, both internal and external, both hierarchical and multimodal. Gestures are therefore a good test of what Lutosławski postulated: a quality of this kind of structure, or in this case a metastructure, that will not be perceptually indifferent[483]. I am deeply convinced that the musical gesture is not only a linguistic, theoretical or analytical category, but that it is a specific way of unifying, reconciling the two main but separate traditions of perceiving the nature of musical movement (motion).

Thirdly, musical gestures can, I think, be applied retroactively in music theory, not limited to Western civilisation, nor to the 20th and 21st centuries. The reasons for such a conclusion are the reasons given above, although other reasons can be found. Musical gestures transcend other categories known to Western music theory, e.g. motif, phrase, period, figure of speech, etc. In a word, they are ontologically far more than a purely structural or purely relational procedure. I think that all the music that is created has to be in some way gestural.

In gesture theory, many categories previously seen as separate or even contradictional are synthesized. I'm not saying it's a general theory of everything. As Aristotle says, "That which has no end [perfection, final, completeness, fulfilment] shall in no case be complete [ended, perfect, finite, fulfilled]; and the goal is the border."[484] I perceive gesture (according to Godøy, three-element: Motion-Action-Meaning) as a form of something that

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[482] The gesture captured in Hatten's metaphor of "a dynamic, significant shaping of motion (energy) through time" resembles an archetype, a topos which, like a myth, happens everywhere and nowhere, and which has broken away from its original, conceptual basis and moves on its own paths. At the same time, like a myth, this movement has its two alternative tales about the internal or external nature of musical movements and has its own, often zealous followers and representatives. *Cf.* C. Levi-Strauss, *Structural Anthropology*, transl. C. Jacobson, New York, 1963, p. 210.

[483] "(...) There is no single move in music, even the simplest, and therefore not even an interval understood vertically or horizontally, or rhythm, or timbre, or even the smallest element of music, that would be indifferent from the point of view of expression. Actually, I only always knew with certainty and very little else", statement from 1980 [in:] L. Polony (ed.), *W. Lutosławski*, [in:] *Scientific Papers of the Academy of Music*, Kraków, 1985, p. 177 [after:] M. Tomaszewski, *Expressions of a Musical Piece...*, *op. cit.*, p. 11. [translation after Tomaszewski done by myself]. "To me, however, one thing is undeniable: no pitch sequence, no sonority can be created without taking into account details of expression, color, character, physiognomy. Even the tiniest detail must satisfy the composer's sensibilities to the greatest degree. In other words, in music, there can exist no indifferent sounds", B. A. Varga, *Lutosławski Profile*, London, 1976, p. 23. Polish transl.: M. Strzelecki, *Harmonic-sound relations in Witold Lutosławski's music and sonoristic works*, [in:] *Music Theory*, 5, 2014, p. 90; and my own.

[484] "τέλειον δ' οὐδὲν μὴ ἔχον τέλος, τὸ δὲ τέλος πέρας". Aristotle, *Fizyka*, III, side no. 207a, 14 [after:] D. Mrugalski, *Eschatologiczna niepoznawalność istoty Boga: próba przekroczenia metafizyki Arystotelesa w ujęciu Grzegorza z Nyssy i Tomasza z Akwinu*, [in:] *Przegląd Tomistyczny*, vol. 25, 2019. [translation afrer Mrugalski done by myself].

gravitates simultaneously towards being τέλειον [*téleion*] and which seems to have τέλος [*télos*] precisely because of its syntheticism.

The theory of gesture is certainly a form of searching for "a single hermeneutic with common principles", which Moraczewski writes about in the context of the reconstruction of Herder's attitude towards idiosyncratic sensory formations in sound art. Rather, the universality of these principles results from the perspective of a transdisciplinary, anti-systematizing method of research. It is astonishing that indeed "this hermeneutics encompasses the entire field of art", since it is convenient in describing music in contact with different poetics of other systems of experience and other media. I do not categorically state[485] that "there are no artistic expressions that would not be subject to it", but gesture as a category in this direction tends to be a factor that integrates, harmonizes and places many musical, and especially compositional, phenomena in a new, and at the same time so natural that almost biological light. Due to its inherent lack of a top-down methodology and its flexible meaning, it does not create conceptual barriers, but rather a reconciling ground for perceptual barriers, even if they cannot be reconciled all. Often, a gesture seems to be a good, or sometimes even the only, starting point in analysis, especially in the case of works of the so-called "new aesthetic turn", in relation to which specific poetics and methods of analysis are only being developed.

Fourthly, the methods of organizing gestures by means of two hypotheses (reductive and hierarchical) and attributing to them functions of different provenance provide – or at least I sincerely hope – the basis for further research, including the analysis of other products of musical culture with the use of the proposed means. The musical gesture underlying the creation of the work seems to be something more than an intermediate entity, suspended between macro- and micro-structure in analysis, being able to determine the entire structure of the work on its own, as I believe, at all its hierarchical levels.

The gesture opens the presented reality in the musical work not only to actual or imaginary realities, i.e. mental realities, but also to other virtual realities. Thanks to it, it is possible to comprehensively explain sound phenomena, both those that are opposite and those that are consistent with the participation of emotions, meaning, external expression, or the embodiment of experiences in music, or their evocation. Gestures are therefore

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[485] I am not inclined to do so until the moment of undertaking and obtaining the results of the comprehensive research signaled in this dissertation, which would verify many of the statements and hypotheses presented here, such as ethnomusicological research on the perceptual-conceptual understanding of sound movement (motion) and the determination of communities of experience and semiotics.

something, as Hanslick wrote, that is better to "feel" than to "explain",[486] since any translation deforms and shallows them, because it requires the mediation of the sign.

Ultimately, then, the gesture is a special form of communication between the creator and the recipient through the performer. Each of these subjects is required not only to have the skills of their profession, *but* also to have a kind of empathy in order to pass the gesture on as losslessly and explicitly as possible with the help of specific tools.

So it can be said that the question of perceiving a gesture comes down to this psychic skill that is empathy. As a consequence, I think that the main characteristic of a craftsman who aspires to be called a composer is not mastery of all techniques, exploration of infinite layers of imagination in their generation and transfiguration, consistency in the implementation of one's intentions, or flexible ability to control expression, dramaturgy, and time. Rather, I think that the main characteristic of such a person is a simple lack of indifference to what one is trying to convey with one's work, both in communication with performers and listeners. Through gesture, what Truslit wrote about is constituted: the ability to experience and express true musicality[487]. What better can I do than to be empathetic and encourage empathy for the other party[488]?

The musical gesture that binds the two parts of my doctoral thesis, both the one applied and explored practically in the composed artistical work, and the one theoretically observed from different perspectives in dissertation, triggering creative and self-reflective processes – showed, I think, its flexibility and richness. In this sense, the research objectives set for the description of an artistic work are at the same time fulfilled in the artistic work.

First of all, the proposed own definition of a musical gesture takes into account four basic common types of its understanding. The various gestures in my piece correspond to all these four orders.

Secondly, and thirdly, my conviction about the universality of the use of this concept is expressed in my search for the unity of gestures in different epochs, styles or cultural circles (although expressed in radically different ways). By finding a number of quotations in the past (e.g. from Bach, Grisey, the monodic recitation of *Bhagavadgītā*), which in my opinion refer in various ways to the gestures composed by me, I have confirmed my conviction as to the correctness of the above-mentioned intuition. This activity has opened up for me a perspective that I care about very much, namely one in which relations of mutual

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[486] *Cf.* E. Hanslick, *op. cit.*, p. 86.
[487] B. H. Repp, *op. cit.*, p. 276.
[488] *Cf.* O. Tokarczuk, *Czuły narrator* – Nobel Prize Speech, Stockholm, 07.12.2019 [source:] https://www.nobelprize.org/prizes/literature/2018/tokarczuk/104870-lecture-polish/ [accesed: 01.05.2023].

commentary on cultural artifacts are formed. This, in turn, is very fruitful in building a relationship with the recipient and giving them unlimited room for interpretation based on both sensory and cultural data, especially symbolic data.

Fourthly, the zonal and hierarchical hypothesis and at the same time reductive, transformative structure of gestures influences the accepted grammar of the piece and makes it possible to make the gesture an element that binds and organizes all the elements and levels of the work, in which **the Central Gesture** in the case of *visiblium et invisibilium* is the making of a match with all its effects revealed in the examination with the *Schlieren Optics apparatus*.

Such an attempt to construct the grammar of the piece, in which parallels are transformatively built between different, transdisciplinary systems of signs (including media such as music and visual) by the power of both iconicity and metaphors, allow for the appropriateness of gestures in relation to each other in their systems. What Peirce calls semiosis, Jacobson calls intersemiotic translation, and Tagg calls interconversion, is nothing more than the same action: transformation, or more generally transformativeness, which is the first step towards building a homogeneous grammar of a musical work. The transdisciplinary transgression of the zone of the auditory space in *visibilium et invisibilium* and the entry into the visual, mental, kinetic and somatic spaces, which allows us to speak of the multimedia structure of the work, and due to the homogeneous way in which these elements are composed in the intermedial direction, allows me to hope that the postulated common hermeneutics is at least to some extent possible. The basis of material homogeneity is the "energetic" homogeneity of gestures, which, despite their different stylistic provenance, medium, understanding, function and space, indicates the possibility of their objective description, while not excluding the possibility of objective-subjective or purely subjective transmission through gesture and receiving much more complex contexts from the gesture.

My creative explorations, including some experiments in which, after the initial awareness of my own reflexes and intuitions, I tried to explore their adaptive possibilities in further steps, open up a great field for further creative transformations and searches. A good example of such a field of exploration is the sphere which, although not accidental, remains somewhat aloof in *visibilium et invisibilium*. I'm talking about the high-altitude organization zone. For a long time I have been preoccupied with the problem of the systemic, still gestural, but not based on purely tonal relations, way of pitch organization, including harmonic organization in the musical work. In this sense, I treat *visibilium et invisibilium* as the first step on this path: summarizing some of my previous intuitions and practice, but also opening up a much wider field for my own further compositional explorations in the field of style, expression and sound language.

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List of abbreviations

AI   *(Artifitial Inteligence)* so-called artificial (simulated) intelligence

AMP   Ignacy Jan Paderewski Academy of Music in Poznań

ASMR   *(Autonomous Sensory Meridian Response)*

CAC   *(Computer Aided Composition)*

Cf.   *(confer)* compare

Dz. U.   Dziennik Ustaw

et al.   *(et alterim)* and others

HCI   *(Human-Computer Interaction)*

ibid.   *(ibidem)*

IRCAM *(L'Ircam, Institut de Recherche et Coordination Acoustique/Musique de Paris)*

m (mm.) measure (measures)

op. cit.   *(opus citatum)*

Transl.   Translated

UAM   Adam Mickiewicz University in Poznań

ust.   subsection (paragraph)

z.   notebook

z późn. zm. as amanded

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