A Performer's View of Knowledge and Music

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PART I

MUSIC AND KNOWLEDGE

The performer's world of knowledge will be the point of departure in this book. Everyday routines and challenges, style and genre, playing solo or in an ensemble, interpretation and communication, are all perspectives in action when playing music. To sort out some strategies in developing a professionalism, Part I will introduce some important concepts directly linked to the everyday routines and challenges. The many methodological approaches that are at stake in the performer's practice makes necessary a broad concept of knowledge. The overall goal of Part I is to make a connection between practice and theory visible and attractive to the performer. Chapter 1 sets out with the main subject for all students of musical performance, practice, practice, practice. This is an example of a practice that involves the practitioner's knowledge. The aspiration to become an excellent performer makes theories on skill acquisition attractive. And, do the genes limit your talent, or is it the genes that make you talented? These are questions surfacing quite often among young musicians.

The professional musician does need to be able to play the notated music but knows that to make the score become music he/she must make deviations from the score in a creative way. Chapter 2 discusses the creative process focusing on the temporality of music as a dimension making the performer's situation and choices unique. At the same time, knowledge of the cognitive dimension of musical practice can enhance the understanding of the creative processes.

Part of classical music's identity is closely connected to traditions of notation. Chapter 3: The rise and fall of literacy in classical music, presents an alternative history of music. The rise of literacy is linked to the first notation traditions in the church where the goal was to secure a consistent liturgical practice in different communities. The development of notation practice made possible a division between composer and performer, and later many professions related to music in society. Common to all were the need for a performance (by yourself or by musicians) to be able to listen to music. In classical music, the notation practice became the fundament for all performances. The invention of the phonograph and the gramophone industry represents the fall where music became available without any competence in the literacy of music.

As literacy is essential to performing classical music, Chapter 4 will present some of the research made on Music reading as eye movements. Developing a flow chart of the reading process will illustrate several elements in the process from the reading to the action in a performance situation.

A MUSICIAN'S STORE OF KNOWLEDGE

INTRODUCTION

Many kinds of knowledge are relevant to performing music. Mastering your instrument demands daily exercises. In the performance situation, you need special preparations different from the practice on your instrument. In developing a repertoire your qualifications and knowledge of style will be challenged, sometimes far away from your standards. To make a career depends on knowledge/language linked to your own and others' assessment of your capabilities and a kind of knowledge/language not at all related to your professional skills as a performer.

A short passage like this reveals the magnitude of knowledge areas involved in developing as a professional musician. Real interactions grow out of an understanding of the distinctive character of each area of knowledge. This book will attempt to point out how knowledge acquisition can be structured and how this process creates restrictions and possibilities for the use of each kind of knowledge. Many curricula express a goal for the student to acquire knowledge, skills and attitudes in order to … I this book I will be using a broad concept of knowledge making skills and attitudes integrated into the acquisition of knowledge when presenting the analysis and theories of methodology and interpretation.

PRACTICE, PRACTICE, PRACTICE

Practice, practice, practice is the ground rule for anyone who aspires to be a professional musician. However, music is an inter-human phenomenon. It is important to practise in such a way that both skills and performances are improved. The professional performer's concept of practice is somewhat more detailed than our everyday notion of it. The goal of practice is not merely to learn a piece of music but to develop complex mental and physical adaptions that, in turn, enable successful long-term skill building. This because it is only through performances that the musician can contribute to developing more nuanced musical expressions and by that giving the listeners opportunities for many-facetted musical experiences.

For the listener to differentiate and categorise varied musical expressions in a new way, it is necessary (nearly always) that the musician has discovered possibilities to differentiate the musical expression towards various elements of knowledge and experiences. By presenting different practical and methodological issues of knowledge acquisition, I hope this book can contribute to develop that

kind of good practice (habitus) supporting the performer's knowledge and his/her perspectives regarding on experiences.

In the communicative chain, the musician is placed between the composer and the listener. The musician's artistic choices are crucial in assessing the (frame of) expressions in the performance. Is the performance in line with and valid compared to what we think are the composer's intentions/the inner qualities of the work? Does it fit into the listener's social construction of experience at the actual venues? I will differentiate between reliability and validity in this manner: A performance is reliable (correct) when it is within the performance practice (tradition) relevant for the work/style/genre. That dimension of the performance makes it possible to identify the performed work. A performance is valid when it gives the listeners new musical experiences in the particular social setting of the performance. The success of a performance/an arrangement of a musical work is not entirely bound to the musical qualities in the performance/arrangement. The reception of the performance is dependent on the venue's social setting and audience. The best is, of course, a performance being both reliable and valid, but a complete success in both dimensions is quite rare.

In classical music, the notation is regarded as a kind of objective reference in the communicative chain. While the initial music signs were allusive memos to practice, the notation became more decisive when adapted to composing (i.e. to put together elements from an existing practice). The notation of the musical work and the written texts about music, musicians and musical life have contributed to an institutionalisation of classical music to such an extent that it makes literacy a characteristic of classical music. Nevertheless, the inconstancy of the musical experience makes the notation system very open for interpretations. This openness has generated discussions on what skills are necessary, what kind of knowledge is needed to perform music from different musical styles and epochs.

What you need to become a good musician is a question having as many answers as there are musicians and music teachers. There is one separation of musicians, at least, linguistic: amateur, student and professional. The student is somewhat squeezed between amateur and professional being too young to be a professional, and not wanting to be identified with the amateur. The most obvious criterion for separation is the question of being paid for performances. There is a wide distribution among all three groups concerning musical knowledge (skills and attitudes inclusive). Nevertheless, among professionals skills are usually on a higher level and more directed/connected to style and expression.

DREYFUS' MODEL OF SKILL ACQUISITION

Musical skills are highly culture-specific, and they share important characteristics with skills in other areas of human behaviour, such as games, science and sports. I will take Dreyfus and Dreyfus: *Towards a phenomenology of ethical expertise*[1] as a

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[1] (Dreyfus & Dreyfus, 1991)

point of departure in describing the development of skills from novice to expert. They characterise five levels of knowledge/competence in this process. Beginning by paraphrasing their definitions, I shall go on to rewrite it taken the musician's perspective. In the footnotes, there will be some examples for each level relating to Mozart's symphonies. (Yes, in my opinion, he was not born as an expert composer, but he certainly did learn fast!)

I   Novice

The instruction process begins with the instructor's decomposing the task environment into context-free features that the beginner can recognise without the benefit of experience. The beginner is then given rules for determining actions based on these features.

   The first lessons playing an instrument focus on presenting the instrument, how to produce sound and how to hold it. The teacher names the most important elements of the instrument, decomposing the environment by denotation, independent of the pupil's qualifications. If music reading is integrated with this teaching, the traditional way is to show the positions of the instrument that directly (physically) correspond to the note on the staff. Quite often this process of denoting the relation between notes and tones results in rather poor sight-reading competence, mainly because the pupil remembers the sound much better than the visual note, and will usually remember the melody, not the notation.

   Context-free features i.e. elements and expressions in music, which the beginner can recognise without the benefit of experience can be the difference between melody and accompaniment, major and minor, two- and tripartite rhythms, the use of simple imitations, and complementary rhythm patterns. In the earliest symphonies of Mozart, some elements and expressions are used without any development. They seem to be something that the young Mozart planted into his composition because he enjoyed the expression/sound of that particular element (context-free).[2]

II   Advanced beginner

After seeing a sufficient number of examples, the student learns to recognise them. At this stage, instructional maxims refer to these new situational aspects. The terms maxims and aspects are used here to differentiate this form of instruction from the previous, where strict rules were given for how to respond to context-free features.

   Dreyfus and Dreyfus use terms maxim and aspect to distinguish this from the level in which the rules were given for how one should deal with context-free characteristics. Rules relate mainly to the already observable material while

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[2] *No.4. KV 19 (London/Hague 1765). D major.*
1. Movement: Suddenly a change to minor (bars 30-33) without any apparent consequence, and a sudden chromatic melodic heap in bar 46 with rather a simple continuation (bar 49).

examples open up for future observations to be interpreted under the example. The fundamental relationships between notation and music performances are established, and the pupils can build a fundamental relationship between their music experience and use of the instrument/notation. The teacher's instructions are no longer necessarily directly related to naming, but the teacher can adopt more contextual concepts (connotations). For example, teaching at the level I (novice) you have to refer to F sharp every time it appears while at level II it will suffice to exemplify that in G major F sharp is always given. When elements and expressions are contextualised, the situational aspects generate the notion of style and genre (maxims in compositions). This will be the first holistic approach to music, and some develop advanced skills in this situation. The extreme variant of this level of advanced beginners is when children play advanced music, at least technically like Monti's *Czárdás*,[3] without being able to perform a Largo. In Mozart's music, a more conscious use of elements (imitation, syncopation, modulations) and expressions (contrasts in dynamics, orchestration, rhythmic stress and melodic line) generates a notion of style and genre.[4]

III   *Competence*

With growing experience, the number of features and aspects to be taken account of becomes overwhelming. To cope with this overload of information, the composer/performer learns to adopt a hierarchical view of decision-making. By first choosing a plan, goal or perspective for organising the situation and by examining only a small set of features and aspects that he/she has learned are relevant given that plan; the performer can simplify and improve his performance.

To cope with the endless combinations of musical elements the composer/performer must adopt a hierarchical view of decision-making. This

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[3] "*Csárdás*" (or "*Czardas*") is a composition by Italian composer Vittorio Monti. A rhapsodical concert piece written in 1904, it is a well-known folkloric piece based on a Hungarian csárdás. It was originally composed for violin and piano.

[4] *No.5. KV 22 (Hague, December 1765) B flat major.*
1. Movement. Mozart uses the Mannheim crescendo (bars 10-14), imitations Vn I / Vn II (bars 23-30), wide-reaching virtuoso activities in cellos and basses (bars 30-39) and most motifs in both piano and forte. The second group of motifs with dominant winds playing long note harmonic progression (a la Gluck). The main motif presented in minor (upbeat to bar 48) is now developed and influence the other motifs until the second group reappear (bar 73).
No.6. KV 43 (Vienna/Olomouc Oct.-Dec. 1767) F major.
Divided Violas in the whole symphony, Oboists change to flutes in Andante movement.
Melodic contour in Oboes doubling the rhythmically developed melody in Vn I. Surprise start in A major in 1.mov. development (bar 50), but with the main theme and developed via G major to C major (bar 72), before the presentation of the second theme in F. The chromatic motive in the Trio (bars 15-18) is an early example of melodic expressionism within the decorative. 4.mov. with imitations between Vn I and Vn II to fulfil a melodic motif, and an Italianate patter song (Stacc. VnI and VnII).
No. 9. KV 73 (75a) (Salzburg 1769 or first Italian journey) C major.
1.mov. The main two-part theme in dynamic and melodic contrast; in forte: C major melodic triad, in piano: falling melodic sequence in imitation. Second theme in Va + Vc/B (+ Fag) (bars 16-26, and 73-84. Epilogue theme in Vc/B (bars 33-43 and 90-100). No repetition of exposition.

hierarchy will consist of models that can simplify and improve the composition/performing process within the actual style/genre. Learning this skill is necessary for realising basic sight-reading and improvisation skills because of the importance of making products that are equal to those who are considered masters and can certify the newcomer. Listening to recordings made by highly esteemed performers is often very useful in rehearsing new repertoire. It is, however, of great importance to listen to historical recordings as well as the newest ones, because the constellation will illustrate the changes of performance practice that have taken place over time. The performer will improve his/her performance by first choosing a plan, a goal or perspective to organise the situation and only then examine a small set of characteristics and aspects that he/she has learned are relevant to such a plan. All master-class teaching focuses on a small set of characteristics and aspects of the piece, which opens up for new interpretations by every new teacher/master. This development represents a fundamental level for everyone who wants to be a musician; mandatory for professionals, optional for amateurs.

The hierarchy of models that can simplify and improve the performing process within an actual style is termed Exemplars by Thomas Kuhn in his revolutionary book *The Structure of Scientific Revolutions*.[5] His choice of terms underlines the representational elements in the way of structuring our impressions. Just think about how many variants we would accept as a drawing of a face. Alternatively, think of how few seconds of a tune we need to recognise it, or, at least, think we know. I will return to some of the cognitive aspects at this level in the next chapter: Music performance as a creative practice.

To Mozart, observing these elements entailed a careful phraseology, harmonic progressions pattern and rhythmical pattern within a stylistic norm. In all symphonies from his Italian journey, Mozart assembles a lot of different elements and expressions but now within the Italian style. Short motifs are often repeated, movements have short development sections (closer to the Sinfonia), and he uses arias as andantes.[6]

IV   Proficiency

As soon as the competent performer stops reflecting on problematic situations as a detached observer, and no longer looks for principles to guide his actions, the gripping, holistic experiences from the competent stage become the basis for the next advance in skill. During this new way of thinking, elements that present themselves as salient are assessed and combined by rule and maxim to produce

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[5] (Kuhn, 1962)

[6] *No. 11 KV 84 (73 q) (Rome April 1770) D major.*
1.mov. A succession of brief, vigorous motives in Italian opera buffo taste. Short development section.
2.mov. Vn + Ob in thirds. Short development section (bars 36-40). Hemiols at bars 14-16 and 53-55.
3.mov. Va and Vc/B contrast the triplets in Vn I and Vn II with harmonically surprising melodic attack in quarter notes.

decisions. A proficient player can recognise a large repertoire of types of positions and sets about calculating the move that best achieves the goal.

Even salient elements assessed and combined by rule and maxim can produce decisions. Many musicians can do their daily exercises watching TV-programme, reading mail messages and so on because they have stopped reflecting on problematic situations in their material. As the goal of a composer/performer is to present the music to an audience, a proficient composer/performer can recognise a large repertoire organised as types (topoi)[7] of musical elements and expressions and he/she sets about calculating the move that best achieves his/her goal. Musical-rhetorical figures of the Baroque era do inflict some restrictions on the performance character and have an impact on the goal of the interpretation. Special gestures, harmonic progressions, ways of ornamenting the material and other features that are characteristic of one composer, will also be recognisable when reaching the level of proficiency. The understanding of conventions of notation will have an impact on the artistic choices in developing an interpretation/ performance. This kind of knowledge is usually more developed among professional musicians than students and amateurs. To Mozart this meant a stronger focus on calculating the expressions that best achieve his (and his father's) goal of pleasing the audience with music that appealed to both amateurs and connoisseurs.[8]

V Expertise

The proficient performer, immersed in the world of skilful activity, sees what is needed, but must decide how to do it. With enough experience with a variety of situations, all seen from the same perspective but requiring different tactical decisions, the proficient performer seems gradually to decompose this class of situations into subclasses, each of which shares the same decision, single action or tactic. This process allows an immediate intuitive response to each situation.

An expert composer/performer will be able to decompose the class of situations where his music is presented into subclasses and decide how to approach the different tactical decisions required. He must be able to perform/compose music that embodies expressive processes as much as it incorporates structural ones.

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[7] (Huron, 2006)

[8] *No.12 KV 110 (75b) (Salzburg July 1771) G major.*
1.mov. The subjects are all different in character, and the form is made clear with cadences even though subjects appears in non-traditional order. The main theme and second subject have the same rhythm pattern. One way of involving the audience in the musical progression is thru imitation between different parts/instruments. In this Symphony Mozart uses this technique extensively in the three last movements. In the 2.mov. the imitation between Vn I and Vn II is doubled with bassoons! (b.10-14) and flutes (b.40-44). In the Menuetto (3rd mov.) the canonical idea is divided between upper and lower strings. This also happens in the finale, but here the connoisseur could hear that the oboes and horns play an augmented version of the first subject's triad. Both amateur and connoisseur would enjoy the G minor episode in the middle of this movement.

   While a focus on the process dominates among novices and advanced beginners, competent and proficient performers concentrate more on the audiences/listeners i.e. the goal of the communicative chain in performing music. The experience of decomposing the situations into subclasses can gradually develop an ability to respond to such situations in an intuitive way characteristic of the expert. As this is the goal for many music students, there is always a risk of skipping the level of proficiency in arguing about the interpretations. Pronouncements such as "I played like that because I felt it was the most natural way to express the music", are quite common, and can be acceptable in some situations. However, if the declaration tries to cover a lack of self-insight in the rules and maxims that produced the decision, the performance/interpretation was not on the expert level. A good test would be to ask the performer to teach a competent student to perform the same piece. To bring about a comparable result, the teacher needs to explain the use of rules and maxims. However, I will return to this challenge several times in this book; not all kinds of musical knowledge are possible to express in a language regardless of the many theories and metaphors available. On the other hand, never trying to decompose this type of situations would be closer to amateurism than professionalism.

   A performance at the expert level will be both innovative and faithful to the tradition and at the same time ensure the performer's integrity as an artist. The interpretation would be innovative by decomposing skills and classifications of expressions (actions/interpretations) and faithful to tradition through awareness of being conscious of the perspectives relevant to the performing situation. In developing an identity as a performer, the musician must combine a personal balancing of tradition and innovation in the interpretations. A listener, having heard several of your performances, might then develop a conception of this identity. In Kuhn's terminology, this would be an Exemplar, which is a cognitive structure analysing several impressions as a unified characteristic. This enables a listener to identify the performer after a few representational elements.[9]

   To Mozart, this level included using orchestration as an important element in developing his musical material, giving the audience a wealth of impressions to cope with in their listening. Such a relation between the music and the listener could be seen as preparing for an acceptance of individualistic musical experiences, a characteristic so central to the new bourgeoisie.[10] Mozart's symphonies 21-41 are all expressions of expertise.

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[9] Singers and instrumentalists are usually recognized by some special sonorities, independent of the work of music they perform.

[10] *No. 20 KV 133 (Salzburg July 1772) D major.*
The two opening three-chord hammer blow are followed by a gentle melody (almost as in Beethoven's Eroica, Mozart's melody is diatonic, while Beethoven's is a triad). This hammer blow is probably a sign to the audience. At the beginning of the development, Mozart does not put on some unexpected harmonies. Instead, he continues at the dominant level for 15 bars (79-93) enhancing the listener's expectations for something to happen, and it does in tutti forte in bar 94. The use of a flauto obilgato in the second movement gives a special focus on one member of the orchestra, personifying the musical content in an individualistic way. The Trio in the Menuetto exploits how the eight notes can be distributed among several instruments with their rhythmic patterns. (Like a revolutionary slogan; "We
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WHAT ABOUT THE GENES?

Very often musicality follows families through generations, and the incidence of musicians is substantially greater in some families. However, exceptions exist where a talented musician grew up from a social and genetic context nearly devoid of musical influences. I have previously referred to curricula enumerating the knowledge, skills and attitudes, but concerning the issue of musicality and the foundation for becoming a good musician, however, a differentiation between the abilities and skills may be required. Shortly one can say that ability is an innate constitution of cognitive structures. Ability is a potential a person has, and it can be realised given the appropriate action/situation. A skill will accordingly be described as an actualization of cognitive structures providing an appropriate situation/impact: you need ability (the potential) to develop a skill.

Tying the ability to innate constitutions creates certain problems in some contexts. Previously an innate ability was considered as a well-defined and targeted ability that equipped the person to master tasks significantly better than others and in ways that did not involve the same learning processes. Describing abilities as a constitution of cognitive structures is an attempt to untie this old notion. Abilities are more potential for behavioural patterns, and they are not independent of the situation/impact of the context. The innate abilities need not be learned, but as cognitive structures, they represent a type of knowledge that the person will benefit from when entering a relevant learning situation. (Absolute pitch is an ability that some have, but it must be activated to become operational. It is also possible to train a perfect pitch; i.e. develop this as a skill.)

The difference between ability and skill is more a matter of degree than an essential difference. Skills are based on the actualization of cognitive structures, both the innate and the acquired, and our abilities are not that specific to tasks. In higher music education, there are examples where a strong and skill dominated training culture (as in some music conservatories in the East) generating students with excellent skills in the repertoire needed for admission to graduate studies. However, during the study, these students may turn out to lack some of the artistic reflection represented by music theory, aesthetics and cultural history. (Playing chamber music and contemporary music often becomes tough for them.) The problem related to validating skills is skills outstanding directness. They are objectivations[11] (observable action) of cognitive structures, and therefore the sounding outcome may seem convincing because it presents (the notated) music work in an impeccable manner.

The expressive musicianship is widely considered to be intuitive, spontaneous, a prime manifestation of talent, and unreachable to those who do not display the talent. Many traditional views on knowledge, talent and musicianship, are

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can all contribute independently of our (social) background.") The last movement is jiglike with lots of imitations, dynamic contrasts and dialogue/fight between winds and strings, quite amusing for a listener.
[11] I will use the terms objectivations and typification in line with Berger and Luckmann (1966). Objectivation is defined as human expressivity that is capable of manifesting itself in products of human activity that are available both to their producers and to others as elements of a social world.

condensed in the previous sentence. It is coherent with the Dreyfus model to define intuition as a characteristic of performances on the highest level. However, intuition is not the only characteristic that can be linked to superb performances. The intuitive is a connection to the performer's other cognitive skills, to his/her proficiency and level of competence. Only through mastering these levels, can the performer be intuitive: without this mastery, the performance is not intuitive but unstructured, random, incidental. Clearly, expressive musicianship gives an impression of spontaneity. However, the expressions of music are not restricted to causes and effects in the plane of succession (melody, rhythm, form and harmonic progressions). It is in the plane of simultaneity (sonority, articulations, dynamics, and harmony/chords) that we first identify the aural impressions as music.[12] As all elements of the plan of simultaneity are rather unanticipated (and the notation system is unable to represent these dimensions in the music), any expressive performance will leave an impression of being spontaneous.

The lack of understanding of the hard work (practise) required by a professional musician, becomes visible when people who do not make music themselves, consider expressive musicianship to be unreachable. They might have had some musical training in school, but failed (the reasons can be numerous), and therefore often connect the question of salary/payment to the delusion of musicianship as unfolded talent (without preparatory work). John Sloboda comments the many elements contributing to the development of a professional musician in this way:

> What we can say with some certainty is that there are a set of circumstances which will increase the chances of attaining of high levels of excellence. These are, early and frequent causal exposure to the music of a culture, opportunities to engage with this music in a relaxed enjoyable environment without performance expectations, early positive encouragement from parents and teachers to engage in musical activity but respect for the child's own autonomy and explorations, a balance between technical and expressive activities, an increasing commitment to high levels of time investment in practice, and the eventual commitment to excellence in the context of a supportive and long-lasting 'master-student' relationship.[13]

A musician has a varied store of knowledge. Practice is inevitable in developing talent (the potentiality of abilities. To do this as efficient as possible, it is important to take care of the characteristics and possibilities the different kinds of knowledge involved. This book presents some perspectives on knowledge acquisition linked to the performer's point of departure.

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[12] I will comment Agawu's terms "plan of succession and simultaneity" later on (Agawu, 1999).
[13] (Sloboda, 2005, p. 312)

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MUSIC PERFORMANCE AS CREATIVE PRACTICE

THE MUSICAL PERFORMANCE

Music has always been a performative practice combining sound, temporal movements and human aural experiences. As such, music has a unique position among the human arts and manifestations. Not all kinds of sonic productions will generate music. The sound/noise from machinery could be described to be a consequence of human actions. However, this would not be regarded as music, unless a human choose to listen to it as such (as did the Futurists in Italia in early 20th century). Even sound from human actions like ballet dancer's jumps and pirouettes are not included in our conception of ballet music.

Music as art has always been unique having the time dimension. A music performance takes place in a particular time and room, and the changes from one moment to the next contribute to the identification of the phenomenon as being music. Such temporary movements of sound make music a here-and-now phenomenon different from sculpture, paintings and literature. Gramophone, broadcasting and the internet have challenged our concept of music presenting a much more mechanical and object focused vision of music, but at least in classical music, the performance by musicians in a concert is still the frame of reference evaluating musical performances. One cause of this might be the performance's possibilities to create temporary movements that tear up the chronological time and where the social context of the venue opens new artistic experiences on an intersubjective level. It is because performers and listeners share the same listening apparatus that musical communication is possible. Human communication is most effective in broad emotional categories that have universal, biologically programmed modes of expression. That makes music to some extent universal, even though styles and genres are more culture-specific.

Augustine (354-430) observes in *De musica* that a characteristic of the music is that either it sounds or there is silence, it establishes an outstretched moment where remembrance (past), attention (present) and expectations (the future) are part of the musical experience. In modern parlance we would say that Augustin here emphasizes that our assessment of a musical impression/performance (the orderly sonic movement) is based on the sensory impact of an acoustic impression (remembrance), compared with our insights/experience (attention) generating ideas about what might happen next (the musical expectation).[1]

Many aspects of a musical performance are rooted in expressive experiences outside music. This situation is not restricted to so-called Programme music from

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[1] (Knight, 1979)

the 19th century orchestral repertoire. Human body motions, speeches and emotional vocalisations, birds and other sounds from nature can emerge as sounding gestures in any style. Such expressions in music are powerful because they mobilise biologically rooted instinctive brain mechanisms. Musical expressions heighten and interact with the way that musical structures play on our experiences of tension and relaxation, expectations and fulfilment. To balance expectancy and surprise is a key component of powerful aesthetic performances. Music affords an apparently unlimited variety of interpretation options. However, as Nicholas Cook points out: The idea of music as sounded writing gives rise to the paradigm of reproduction: "performance is seen as reproducing the work, or the structures embodied in the work, or the conditions of its early performances, or the intentions of its composer."[2] In performance, the performing musician have to actualize all these aspects of constant interactions in ways that are often referred to as a creative practice. A musician's alertness to the soundscape he/she produces will naturally be dependent on a well-developed sensory apparatus, i.e. the possibility to differentiate the qualities of the sounds produced to make adjustments possible. To develop these differentiations is an important goal in tutoring and many teachers develop various sets of expressions and terms to identify the differences.[3] Such adjustments, however, will not be limited to knowledge of sound production on the instrument. Other areas of knowledge are set in motion; knowledge of style, interaction experience, audience response, etc.

Given the fact that such adjustments happen during a performance, it seems as if there is a general musician's awareness/understanding taking care of these challenges. This is a view many professional musicians would share, and in many cases, I think that this type of reference provides an operative explanation. I want to look more closely into this "musician knowledge" (general musicianship). I believe that much of this knowledge is acquired during a long life as a professional musician and hardly any attempt has been made to verbalise it. The need has not been particularly intrusive, and the available knowledge has functioned satisfactorily in most situations that each musician has experienced. One reason to try to extract this "tacit knowledge" and make it conceptual is that awareness of such processes reduces the learning time required for reaching a desired skill/level of knowledge. Much of this kind of musician's knowledge is built through standardised musician practices related to institutional activities, or it is related to specific music genres.[4] Another reason to challenge this musician's knowledge is that in today's music world, opportunities to cultivate a professional work within a limited number of music styles and genres are substantially less than was the case for previous generations.

Musicians tend to think of musical style, so fundamental in musical performances, in terms of chronological period, provenance, nationality, genre,

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[2] (Cook, 2013, p. 3)
[3] Sometimes using words/metaphors from completely other areas than music (from nature, art, physics).
[4] The notation of syncope would be the same in a piece by Mozart as by Scott Joplin, but you should make it sound differently.

composer and/or work. Concerning cognition, however, style is simply repetition. Within a musical work, we recognise when we are experiencing something heard earlier, and between pieces, we recognise when we hear something learned elsewhere. Repetition is also of importance searching for the principles that govern expressive performance in music. A considerable body of research has built up an understanding that expressive timing cannot be understood as a learned pattern that is applied to a piece each time it is played but must be generated from the performer's understanding of the musical structure. When rehearsing a piece, achieving an understanding of the musical structure is much more effective than focusing on the chronological timing. In principle, every aspect of musical structure contributes to the specification of an expressive profile in a work. However, some authors have shown that phrase structure is particularly salient.

A special approach to musical style can be found in the HIP-movement. Historically informed performance (also referred to as period performance, authentic performance, or HIP) is an approach to the performance of Western music and theatre. Within this approach, the performance adheres to state-of-the-art knowledge in the aesthetic criteria of the period in which the music or theatre work was conceived. Music is usually played on instruments corresponding to the period of the piece being played, such as period instruments for early music. Historical treatises, as well as additional historical evidence, are used to gain insight into the performance practice (the stylistic and technical aspects of performance) of a historical era. Historically informed performance has originated in the performance of Medieval, Renaissance, and Baroque music, but has come to encompass music from the Classical and Romantic eras as well. Quite recently, the phenomenon has begun to affect the theatrical stage, for instance in the production of Baroque opera.

Some scholars see the HIP movement essentially as a 20th-century invention. One of the more sceptical voices of the historically informed performance movement has been Richard Taruskin. His thesis is that the historically informed practices are actually a 20th-century practice influenced by modernism. We can never know what music sounded like or how it was played in previous centuries.[5] Daniel Leech-Wilkinson concedes that much of the HIP practice is based on invention:

> Historical research may provide us with instruments, and sometimes even quite detailed information on how to use them, but the gap between such evidence and a sounding performance is still so great that it can be bridged only by a large amount of musicianship and invention. Exactly how much is required can easily be forgotten, precisely because the exercise of musical invention is so automatic to the performer.[6]

Leech-Wilkinson concludes that performance styles in early music "have as much to do with current taste as with accurate reproduction."

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[5] (Taruskin, 1995)
[6] (Leech-Wilkinson, 2012)

In her book, *The Imaginary Museum of Musical Works: An Essay in the Philosophy of Music,* Lydia Goehr discusses the aims and fallacies of both proponents and critics of the HIP movement.[7] She notes that the HIP movement itself came about during the latter half of the 20th century as a reaction to the way modern techniques were being imposed upon music of earlier times. Thus, performers were concerned with achieving an "authentic" manner of performing music—a 20th-century ideal that carries implications for all those involved with music. She distils the late 20th century arguments into two points of view, achieving either fidelity to the conditions of performance, or fidelity to the musical work (her book is concerned with the idealisation of the musical work).

She succinctly summarizes the critics' arguments (for example, anachronistic, selectively imputing current performance ideas on early music), but then concludes that what the HIP movement has to offer is a different manner of looking at and listening to music: "It keeps our eyes open to the possibility of producing music in new ways under the regulation of new ideals. It keeps our eyes open to the inherently critical and revisable nature of our regulative concepts. Most importantly, it helps us overcome that deep-rooted desire to hold the most dangerous of beliefs, that we have at any time got our practices absolutely right."[8]

THE CREATIVE PRACTICE

The creative practice is founded on the ability to group and make sense of information, impressions and associations. Alternatively, we could say; creativity is the ability to combine impressions and/or associations constructing meaningful expressions/information. It depends on previous knowledge, be it procedural (knowing how) or declarative (knowing what) or propositional (knowing that).[9] The knowing how is essential to a performer. It does not help to have creative ideas if you cannot present them in a performance. The knowing that (sometimes referred to as "knowing what") is important in selecting elements in the creative flow to make a reliable and valid performance/expression.

There are hundreds of definitions of creativity, from a rather simple one like: "creativity involves the production of novel, useful products,"[10] to a definition given by Paul Torrance:

> A process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies, and so on; identifying the difficulty; searching for solutions, making guesses, or formulating hypotheses about the deficiencies: testing and retesting these hypotheses and possibly modifying and retesting them; and finally communicating the results.[11]

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[7] (Goehr, 2007)
[8] (Goehr, 2007, p. 284)
[9] The distinction knowing how and knowing that was first debated in Ryle (2009).
[10] (Mumford, 2003, p. 110)
[11] (Torrance, 1974, p. 6)

Theories of creativity have focused on a variety of aspects. The dominant factors are usually identified as "the four Ps"—process, product, person and place. A focus on process is shown in cognitive approaches that try to describe thought mechanisms and techniques for creative thinking. Theories invoking divergent rather than convergent thinking (such as Guilford's theory of human intelligence[12]), are primarily theories of creative process. Convergent thinking involves aiming for a single, correct solution to a problem, whereas divergent thinking involves creative generation of multiple answers to a set of problems. Divergent thinking is sometimes used as a synonym for creativity in psychology literature. Other researchers have occasionally used the terms flexible thinking or fluid intelligence, which are roughly similar to (but not synonymous with) creativity. An Awareness of your ability to use divergent and convergent thinking can have great impact on your learning strategies and outcomes.

George Wallas in *Art of Thought* (1926) presented one of the earliest models of the creative process.[13] In his stage model, creative insights and illuminations were explained by a process consisting of 5 stages:

(i)   Preparation (preparatory work on a problem that focuses the individual's mind on the problem and explores the problem's dimensions),
(ii) Incubation (where the problem is internalised into the unconscious mind, and nothing appears externally to be happening),
(iii) Intimation (the creative person gets a "feeling" that a solution is on its way),
(iv) Illumination or insight (where the creative idea bursts forth from its preconscious processing into conscious awareness);
(v)   Verification (where the idea is consciously verified, elaborated, and then applied).

Lehmann/Sloboda and Woody combine intimation and illumination but add a new level of elaboration after the illumination, making trial-and-error work the most prominent element in this phase.[14] Because the first solution seldom appears to be the best, composer and writers edit more or less constantly while working. This trial-and-error process is commonly referred to as sketching and provides important information concerning the generative process. Beethoven is probably the best-known sketchbook-holder among the composers, but even Mozart did sketch compositions. For a performer having access to manuscripts and sketches may unfold information that often has impact on the development of an interpretation.

Improvisation is often regarded as playing from sketches. However, while a composer can do sketches and occupy her- or himself with other actions in between, an improviser have to make a continuous stream of musical ideas sound in the performance. Improvisation in jazz as in classical music (Baroque music,

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[12] (Guilford, 1967)
[13] (Wallas, 1926)
[14] (Lehmann, Sloboda, & Woody, 2007)

organ improvisation, cadenzas, etc.) and in rock groups is not a stream of new inventions; the musicians engage in a sort of collective memory composition. They start with some refined versions from which the start crystallising each new performance. However, they operate on different time scales in composition and improvisation. The composer can think at length about solutions, write them down to avoid forgetting and combine them to a specific musical work. Improvisators have to cope with real-time constraints, automatizing a number of processes that would otherwise hinder them in seeing the overall context and collectively compose the piece/performance to some perfection.

In the '90s, various approaches in cognitive science that dealt with metaphor, analogy and structure mapping have been converging, and a new integrative approach to the study of creativity in science, art and humour has emerged under the label conceptual blending.[15] Insights obtained from conceptual blends constitute the products of creative thinking; however, conceptual blending theory is not itself a complete theory of creativity, since it does not illuminate the issue of where the inputs to a blend originate. In other words, conceptual blending provides a terminology for describing creative products, but has little to say on the matter of inspiration.

A focus on creative product usually appears in attempts to measure creativity (psychometrics) and in creative ideas framed as successful memes. Developing strategies for memorising musical works has always been an esteemed ability among musicians and audiences. Competitions in music performance, as an attempt to measure creativity, are an integrated element in a music student's life. Entrance exams, final exams, auditions, competitions are necessary steps for a career as musician. Playing the same repertoire (from the canon) is not necessary the most creative circumstance, and in some kinds of auditions (with certain orchestras) the performance has to be in their tradition, leaving hardly any space for creativity. In society, there is a focus on the nature of the creative person as having some particular intellectual habits, such as openness, levels of ideation, autonomy, expertise, exploratory behaviour and so on. Some musicians (and other artists) extend their exploratory behaviour excessively by using drugs as part of their creative life.

A focus on place considers the circumstances in which creativity flourishes, such as degrees of autonomy, access to resources and the nature of gatekeepers. Creative lifestyles are characterised by nonconforming attitudes and behaviours as well as flexibility. Artists have been statistically overrepresented in society by their nonconforming attitudes and behaviours. However, all kinds of groupings in society make use of nonconforming attitudes as part of their identity/image. They are only nonconforming in a general perception of practices but inside the group, it might be rather strong dress code, language/slang-restrictions and all kinds of preferences. The most sustainable creative lifestyles manage to integrate flexibility as a balancing element.

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[15] (Fauconnier & Turner, 2002)

The sequence and probability of certain events help us establish meaning. This is just as important for the listener as for the performer. As they usually are two different human beings, construction a process where social and cultural conditions stored as memories have great impact on the result (the musical experience) makes meaning. The first stage in memory forming is a short-term sensory memory that lasts only fractions of a second. If its content is meaningful and actively grouped, it can be transferred to long-term memory. The efficiency of the memory skills has been found to be domain-specific, meaning that unfamiliar material or structurally incoherent material is less memorable. Chunking is the process of grouping perceptual inputs into meaningful units like a memory mechanism that links our perception to previously stored knowledge. In music reading, chunking is active all the time organising the flow of impressions from the sheet of music into action impulses (cf. Chapter 4).

Creativity, improvisation and intuition are three concepts often used in evaluation and characterisation of performances. They all have a flavour of esteemed uncertainty compared to chunking, a more technical term. However, there are important differences between the three concepts. Musical performance is a practice where 'creativity' can be used as the overall characteristic. Music has to be created to exist, and in that sense, musical performance is a creative practice. In the performer's preparation for a performance, there are kinds of information, knowledge and impressions that must be coordinated and quite often the performer does this in an intuitive way. That is, he/she organises the input in heuristic systems based on intuition i.e. as biased information where you do not know in what way it is biased. In the performance practice, the implementation of an interpretation is the area for (more or less) improvisation. That is, activating the output of the heuristic systems of knowledge established through practices and rehearsals, improvisation can emerge as a guiding principle focusing on the here-and-now situation.

The cognitive dimension of musical practice always has interested psychologists. In the last decades, several theories and experiments have used the metaphor of fast and slow thinking in their descriptions of how our brain works. Daniel Kahneman in his bestseller book *Thinking Fast and Slow* divides the mental life between two agents, called System 1 with automatic operations and System 2 with controlled operations.[16] System 1 operates quickly and with little or no effort and no sense of voluntary control. It generates impressions, feelings, and inclinations; when endorsed by System 2 these become beliefs, attitudes, and intentions. System 2 allocates attention to the effortful mental activities that demand it, including complex computations. The operations of System 2 are often associated with the subjective experience of agency, choice, and concentration. Kahneman has been most interested in System 1 and has documented systematic errors in the thinking of normal people, and he traced these errors to the design of the machinery of cognition rather than to the corruption of thought by emotion.

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[16] (Kahneman, 2012)

This in contrary to the traditional view that we are rational but strong emotions can explain the occasions where we depart from rationality.

Using Kahneman's discourse of System 1 will enhance our possibility to describe important processes in the creative practice of musical performance.[17] System 1 can be programmed by System 2 to mobilise attention when a particular pattern is detected (search). This is of great importance in sight-reading music (see Chapter 4). It also makes possible a searching listening modus in a concert, as well as when you experience the cocktail-party effect (if someone in a noisy environment mentions your name you will immediately be able to locate and continue to listen to that person talking). System 1 executes skilled responses and generates skilled intuitions, after adequate training. (Practice, practice, practice). One of the more shocking characteristics of System 1 is that it creates a coherent pattern of activated ideas in associative memory. This associative memory continually constructs a coherent interpretation of what is going on in the world at any instant. This function is often so strong that we cannot change our view of the world, even if our rational System 2 has strong arguments. Take these two faces. They are identical in all aspects except the smiling or grumpy mouth. However, it is very difficult not to see the smile/grumpiness in the eyes as well!
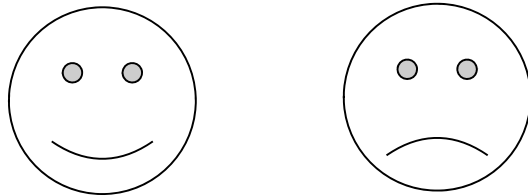
Figure 1. Smiling and grumpy faces (System 1)

In everyday life, we regard the creating of a meaning of elements in new contexts as a product of creative practice. The borderline of contextualization of sounds has always been a line of demarcation to style identification. The kind of sounds taken into and accepted as a musical sound is part of the primary identifiers of any style. Is there a need to adjust the sound when transferring a folk tone to a classical way of playing for it to be used in a classical music work? In today's performances and recordings, there is a tendency to play folk tunes more in a folk music style even in a symphony orchestra.[18] New styles establish a meaning to elements that were previously regarded as meaningless. They could be used in connection with existing elements, but in the new style, they are refined and become important identifiers of the new style. The change in performance practice of music from the Baroque era following in the wake of the early music movement

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[17] For the complete list, see Kahneman (2012, p. 105).
[18] Listen to several recordings of the last movement in Haydn Symphony no.104. Some recordings play the Croatian folk song in the opening the finale in a very classical way, and others have a typical folk-tune idiom.

is one example. Inegalité did occur in performances of this repertoire before the early music movement, but now it is a characteristic of historically informed practice.

Sounds not produced by a musical instrument are usually not accepted as having potential to express musical ideas. However, it is very difficult to draw a line of demarcation between sound objects in the world that can be musical expressive and those who cannot. The nature with all its sounds from birds, animals and weather, have always inspired musicians to imitations. Such sounds have been easier to accept than sounds from human artefacts like machines and city life. As these sounds have such a strong denotation to a non-artistic situation, (like the whistle at the factory), it's hard to construct artistic meaning in such contexts.

The firm link between creative practice and the establishing of meaning makes it relevant to combine the description of creative practice with an overall view of skills. As previously mentioned, the evolution of skills is described in hierarchical structures. Several theories exist in addition to the Dreyfus one that I presented. In addition to defining the level of skills, they often add characteristic verbs and nouns to each level (illuminating a hierarchy of actions and social roles). In this model, there is a colourful tribute to Maslow's hierarchy of needs as well.[19] Maslow used the terms "physiological", "safety", "belongingness" and "love", "esteem", "self-actualization", and "self-transcendence" to describe the pattern that human motivations generally develop.

Invent	Creating new knowledge skills, products	Craftsman	Expert	Self-actualisation	Equilibrium
Solve	Creative use of skills to resolve problems	Expert	Proficiency	Esteem	Adaption
Work	Purposeful use of knowledge	Specialist	Competence	Love/ belonging	Accomodation
Play	Motivational use of knowledge	Apprentice	Advanced beginners	Safety	Assimilation
Know	Acquiring basic knowledge	Student	Novice	Physio-logical	Schemata
Adapted from Kokcharov[20]			Dreyfus	Maslow	Piaget

Figure 2. Hierarchies of skills, needs and cognition

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[19] (Maslow, 1943)

[20] Both Kokcharov and Maslow's models are usually illustrated as pyramids (see website http://www.slideshare.net/igorkokcharov/kokcharov-skillpyramid2015).

The combination reveals a possibility to connect Maslow's terminology to a musician's career. It might be too stereotyped compared to today's working market. Nevertheless, it is an ideal not yet totally removed from young musicians' minds. I have interviewed many students at their audition and looking through their CV I could see possibilities for many other studies and life careers. However, during the interviews, they convinced me that music (music study) was something they just had to do (as if it was a physiological demand in their bodies). If after studying at the music conservatory you manage to win an audition in an orchestra, you will probably have a period of probation before you can obtain permanent employment. In this period, you will act as an apprentice with a focus on safety. Making no mistakes is more important than being creative (but do try to be pleasant in social settings). You have an intrinsic motivation to use all your knowledge to safeguard your position. When happily engaged in a permanent job you can revitalise your interest in chamber music combining your knowledge of and love for that repertoire and satisfying your need for social belonging. If you are successful – that is when other musicians and the audience recognise your creative use of skills to resolve problems, this will make you known as an expert, and you can benefit from the high esteem of your proficiency. Having established such a solid reputation may open for the kind of self-actualization where creating new knowledge, skills, products or services, even taken leadership responsibility make your career outstanding. (Good luck!)

There seem to be two kinds of motivation for engaging in music. The 'intrinsic' motivation develops from intensely pleasurable experiences of sensual, aesthetic or emotional character that lead to a personal commitment to music. The 'extrinsic' have a focuses on achieving certain goals (e.g. parents' approval, identification with role models, winning competitions). All musicians have a combination of these two types of motivation. Too strong focus on the extrinsic motivation in childhood may make them more concerned about what others may think of their performance leaving little attention for allowing the potential of the music to engage their aesthetic and emotional sensibilities deeply.

Some have raised the question whether a musician is creating or re-creating a musical work in his/her performance. I find the question more connected to choices of terminology than to musical practice. Taking an ultimate position, I could say that music exists only when a listener defines an impression as music. The music is created here-and-now, and regardless of how strongly the performance is connected to a tradition (making 're-creation' a possibility), the listeners will adapt the music in their horizon of understanding, their core of knowledge. The differentiating between composers as creators and musicians as re-creators seems to me more like a discourse for labour unions than for the developing of musical understanding.

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THE RISE AND FALL OF LITERACY
IN CLASSICAL MUSIC

INTRODUCTION

The United Nations Educational, Scientific and Cultural Organization (UNESCO) has drafted the following definition of literacy:

> Literacy is the ability to identify, understand, interpret, create, communicate and compute, using printed and written materials associated with varying contexts. Literacy involves a continuum of learning to enable an individual to achieve his or her goals, to develop his or her knowledge and potential, and to participate fully in the wider society.[1]

The first part of this definition links literacy to our cognition as an ability. Abilities develop skills and habits. Much of everyday life as a performer will focus on skills and habits and, therefore, it is of importance to know something about how we have developed these abilities. The second part of the definition connects literacy and learning in our use of printed or written materials. This is a situation particularly pertinent to performers of classical music. I will use the exploration of literacy in classical music as a remedy to present an alternative music history.

THE RISE OF LITERACY IN MUSIC

Music has always been a performance practice based on sound, temporal movement and our aural impressions. The dynamics of music in time and space makes musical make expressions unique in our understanding of the world and of other human beings. Like any other human practice, music has had the need to pass on acquired knowledge from one generation to the next. This happened aurally, but even if this kind of objectivation of practice could be supported by oral legitimation, it was bound to the here-and-now situation for establishing a tradition.[2] In most societies, a multiplicity of traditions would be accepted as an enrichment of the human community. However, to establish an identity within a society, there was a need for giving some traditions priority, making a hierarchy of musical performance practices.

The most influential maker of identity in our western culture of music in the last two thousand years has been the church. The need for distinguishing church music from the practice of non-Christians' musicianship made it natural and necessary to

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[1] http://en.wikipedia.org/wiki/Lietracy (16.04.2008).
[2] (Berger & Luckmann, 1966)

develop a kind of uniformity (the liturgical aspect) in a music tradition. As this uniformity was to be the same in the whole church, independent of geographical and cultural differences, a kind of notation system that would secure a transition from one generation to the next without being bound to a here-and-now situation was needed.

The similarity to language and the written word became the basis for the first musical notation. In the church societies, the spelling of the Word was essential, and this contributed to making the literacy an important element in identifying and structuring the Christian societies. The church was the first institution to write down music systematically to establish an objective musical practice, connecting musical performance to a literacy context.

Bringing literacy to the music had several consequences. First of all, literacy will function as an enhancing process in establishing a tradition, as it allows transference of knowledge from one generation to another in an abstracted manner, creating both the object of knowledge and the ideological framework for the knowledge that identifies the tradition. The notation system objectifies the music, and the elements in notation (musical signs) are the results of choices that have ideological background and consequences.

Secondly, literacy opens up for a separation between the creator (composer) and the performer (musician). This dimension was not important at the beginning of church music as its focus was on the use of music in the congregation, not on musical work as such. The separation became crucial when the separation of the roles of the composer and musician developed from the Renaissance onwards.

The third consequence of bringing literacy to music is in a way contradictory to the first one. As any notation system must be based on a reduction of the object to a linear sign system, there is a possibility for the formation of a new relation between the content and context of the original object.[3] This might be destructive to the actual tradition and its development as a musical (aural) tradition. (Example: The traditionally skewed tonalities and rhythmical variability in folk music are impossible to capture in the traditional music notation system. Transference from one generation to another based on traditional notation in folk music might, therefore, reduce the amount of expressive qualities in the folk music.)

The link between content and context in a tradition is also the crucial momentum in establishing a genre (within a tradition). It is, of course, possible for any genre to use any sounding element as content in its music, but there are restrictions on the use bound to the context of the performance/music to be identified as music in a particular genre. Identification of a genre by its intrinsic elements reinforces the link between the content and context of its tradition.[4]

The possibility of stagnation is avoided by stylistic developments that change those technological and social elements that can be integrated as intrinsic elements

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[3] Textbooks in counterpoint use another set of arguments today than was utilised in the Baroque era.
[4] It seems, though, at least in some popular genres, that the music critics prefer to identify a genre by reference to the performer's biographical/geographical background and visual appearance, and not to the choices of intrinsic musical elements.

of the genre. The literacy in a tradition will make such developments much easier as literacy can be a general platform for acknowledging integrations. In music, written scores allow strangers to participate in music performances, and their background and expressions will affect the performance.

Literacy in music was initially closely related to performing texts in liturgical contexts. Sketched in an allegorical way the musical content was only related to the melody (drawings indicating frequency modulations). The context of the performance determined the overall framework of the music/performance. The need for a more efficient transference of the traditional material led to a more systematic notation system in music, covering melody, rhythm, and harmony. This process took several hundred years, and it is still developing in search of better representation and accuracy between musical content and notation.

The musical notation system is not equivalent to our written language mainly because music notation lacks uniform and objective elements in the alphabet. Conventions in the understanding of a sign are much more a necessity in making music reading meaningful than in text reading. Several different information systems cooperate at the same time: Pitch can be relative due to the use of clefs, transposing instruments and knowledge of the history of tuning and concert pitch. The duration of a tone can change due to tempo, meter, historically informed performances and agogic expressions, and the dynamic range depends on other stylistic indicators and acoustical effects in the room of performance.

THE WORK OF ART

A particular historical conception including a special relation between composer and performer, literacy and audibility and between content and context of music developed in the Age of Enlightenment. While the music in The Middle Ages was still seen as a gift from God, the individualism in the Renaissance made way for the understanding of music as an activity created by human beings. The separation of roles between creator and performer that had been latent in the literacy-based music society was now released with establishing the composer as the creator of musical works and the performer as the presenter of these works.

While the earliest compositions/notated music were merely a memo of traditional elements to be used in a unique context, compositions in the Renaissance and Baroque era became individual works with more or less specific relation to a context. Still, mostly composers were also performers, but the growing music publishing activity gave new possibilities for music literacy, loosening the connection between composer and performer in a way that separated these roles.

These musical works were not only a reflexion of the musical practice, but they were new compositions meant to show development in the style of that distinctive musical genre, as seen by the individual composer. The composition/score was not only a documentation of performance practice but also an attempt to construct a musical world of its own, independently of the context of performance.

The rationality of the Enlightenment enhanced the idea of the unique musical work, and the new bourgeois society (Bastille 1789) took the concept of art as one

of its identifiers. Art was defined as being a dimension of music, literature, painting, sculpture that could be exposed for individual appreciation and public comment. This dimension was connected to the work of art and not as earlier to the commissioner, usually a male person from the aristocracy or the church. In the hierarchy of the feudal society, it was the commissioner who decided whether a musical work/performance was good or not (mostly dependent on its contextual qualities). This changed now as the bourgeois society opened up for dialogue among people in the society (audience) to discuss music as a work of art.

Composer – Performer

The primary differentiating element between the role of performer and composer was the use of opus as an identifier of the composer's musical work. By using the opus numbering or any other objective classification of their compositions, the composer announced a distance to musical works generated from a musical performance practice. The autonomy of a musical work as an opus liberated this work from a pre-designated context. The performer's role became more of an instrumentally oriented caretaker of the performance practice.

With the rise of instrumental music in the Baroque era, the musical notation became more accurate, and the composer's specifications on how to perform his musical work became more detailed. Nevertheless, the notation was rather loose on rhythm and sonority, and the use of figured bass notation in continuo playing indicates that there was still a strong connection and need for mutual understanding/knowledge between composer and performer in the realisation of a musical work.

Literacy and Audibility

The relation between a musical performance and the musical work was changed with the establishing of the idea of a musical work as a work of art, independent of the actual performance. This separation was essential in the bourgeois society, and it opened up for a kind of literacy in music where the musical notation became only one of several written sources for knowledge that could contribute to the understanding of music, its works and performances.

In the second half of the 18th-century treatises on performance practice came from profiled composers such as C. Ph. E. Bach (keyboard), J. J. Quantz (flute) and L. Mozart (violin) and others.[5] This kind of literature was a part of the encyclopaedical focus in the age of Enlightenment. The appearance of such treatises can be seen as a differentiating element in the roles of composer and performer, as they expose the multiplicity of performance related to a single musical score/work. On the other hand, such an overview will have the effect of defining a tradition and then reducing the interpretative possibilities of a notated

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[5] (Bach & Schwickert, 1780; Quantz & Reilly, 2001; Mozart, 1956)

piece of music. At the same time, the canonisation of performances establishes a room for evaluation of performances, a room that the bourgeois society took up as a room for the interpretation of a performance.

Listening to a particular musical work was no longer a single event. Several performances could be compared, and their interpretative potential discussed. The separation in audience between the Kenner und Liebhaber has some similarities with the roles of composer and performer. The Kenner uses his knowledge of composition and music history (that is objective, rational argumentation) while the Liebhaber (music lover) uses a reference to his experience of the expressivity of the performance (a subjective, expressive argumentation). The similarity is based on the assumption that the composer's role is to construct music, and the performer must give it expressivity in the performance.

Content and Context

With the bourgeois idea of music as art, the content of music in performance was not restricted to the actual sounds from the performance but went beyond that physical event. There is a need for any music to be a part of a tradition and this will establish a definite relation between content and context that certifies the performance as a valid and reliable part of the tradition. The context includes the arena for performances, the audience and their social status that enabled them to be present at the performance and what we have described as the literacy of the musical work. This combination of content and context (arena, audience, and literacy) makes it possible to develop any style or genre from the performance practice.

Music that is appreciated as art (music with an ideological potentiality) will be related to both social and literacy elements, and it is the literacy elements that are fundamental to the development of the concept of music as art.[6] This affects the internal components (the content) of a musical work for both the performer and the composer. The use of musical-rhetorical elements in the Baroque era is one example of how extraordinary (non-musical but literacy related) elements intervene in and regulate the practice with consequences for both performers and composers, and of course for the listeners.

The understanding in the bourgeois society of itself as a carrier of universal principles made it possible to develop the idea of absolute music in accordance with Plato's ideas.[7] In a context of music bound to so many non-musical relations, this universalism became a stylistic ideal in the classical era, and it gave extra strength to the need for a strong relationship between content and context in the musical practice.[8] The idea of absolute music was a listener's concept that partly affected composers and to a lesser degree the performers. The concept was not

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[6] Literacy is based on the human possibility to create symbols and attach meaning to them.

[7] (Bonds, 2014)

[8] Mozart and Haydn could use folk tunes in their compositions without this being seen as a kind of cross-over between genres, as long as these compositions were performed at "correct" venues.

restricted to theories in composition or performance practice but could use the complete communicative chain in music as a foundation for establishing an ideological superstructure.[9]

THE CLASSICAL MUSIC

In music history, we divide the stylistic evolution in accordance with eras in the general history of art. The Classical era was one of the shortest ones (1750-appr.1800) compared to the previous ones: The Middle Age (500-1500), The Renaissance (1450-1600) and the Baroque era (1600-1750). It was followed by the Romantic period of the 19th century and what is still often referred to as the Modern music/20th-century music. Even if it was a short period, it was a paradigmatic one in our understanding and aesthetics of music. Oversimplified we could say that whereas previously the qualities of music were to be found in the music as sound, now music became an art open to new approaches to the understanding and appreciation of music. Music had unique qualities in its ability to move the listener's mind, but these qualities were dependent on the receiver's attitude to and knowledge of music.[10] This Kantian turn enhanced the importance of literacy in classical music by emphasising the listener's entire horizon of knowledge as a premise for musical experiences.

In this way, both music literacy and the listener's individuality became important components of classical music. This combination has been the core element in establishing the genre of classical music, beyond different stylistic developments. Today we use the term classical music to any musical style independently of the historical era, as long as we can identify the literacy element in the music. This identification is often based on studies of the stylistic development documented in musical scores from the different eras. The result is a use of concepts like "a work of art" even to musical works in periods where music was only performance practice without any claims of being art.

Classical music (in this wider sense of the expression) is a musical genre that has incorporated literacy as one of its central elements, as one of the identifiers that separate classical music from other genres. At the same time, literacy promotes institutionalisation and rationalisation of practice giving its activities power and influence in societies that appreciated these qualities. Ideologically, rationality and common sense were to be the momentum in a discussion. That was an upgrading of the argument. Now it became independent of the person who presented it. In the bourgeois revolutions from the late 1780s in Europe, it was essential to replace the old feudal system with "democratic" institutions. Consequently, institutions like opera houses, concert halls, symphony orchestras, music conservatories and commercial music public houses from late 1700 were formed. The gradually more separated labour connected to the musical practice is rationality in practice. Not only between performer and composer, but also through many new roles with a

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[9] (Dahlhaus, 1989)
[10] (Kant & Weischedel, 1790/1974)

need for some music knowledge (in music critic, administration, and agency) evolved. This development generated many secondary production elements such as the manufacture of instruments (piano) for the public, promotion agencies for artists and gradually a musicology that distinct from textbooks in composition and performance practice.[11]

The bourgeois society used classical music with its literacy dimension as an identifier of their society itself and the art dimension as the ideological frame for supporting the establishment of a classical music tradition with its publishing activity, concerts and forming of institutions. The classical music became not only a vital identifier in the bourgeois society but with its definite relation to literacy; classical music became an important and influential element in society's investment towards different genres of musical practice. Literacy and rationality gave preference to classical music in many positions, and the combination of public institutions and a free economic market enhanced the potential for an unusual combination of content and context in classical music. This rationality was combined with a seeking for expressivity that could combine a proper lifestyle with the characteristics of freedom, equality and brotherhood.

The literacy in classical music has made an impact on several elements and roles in the musical society. The most definitive are the composer's use of 'opus' as a way of announcing a self-critique that distinguishes between musical composition as a practice based on performance and musical composition as a work of art, Beethoven setting the standard. We can, of course, find composers that have used the terminology earlier, at least in the Baroque era, but then it was mostly indicating a collection of compositions within the same genre or for the same (grouping of) instruments. However, from the beginning of the Romantic era, the use of opus became related to the idea of a serious/classical composition as a work of art.

For the performer, the literacy in classical music had several consequences. There has always been a hierarchy among musicians based on their skills on their instruments. The literacy-dimension (the ability to read and perform music from the score/sheet music) and the performer's technical skills were the criteria for positioning in the hierarchy from amateur to professional. Now the focus on the interpretation of the performance made way for taking into account other kinds of knowledge than sight-reading and technical skills. In this way the literacy in classical music both tightened the bond between the performance and the notation; to be a professional you had to be able to perform in accordance with the notated music, but at the same time this bond was differentiated by the accept of different interpretations of the same notated music.

The literacy in classical music became essential for developing the understanding of a composition as a work of art with a performance as one of the several possible manifestations of the work. The notation being the potential of the music and the performance its actualisation. This way of thinking also generated

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[11] Cf. Guido Adler's division between Historical and Systematic Musicology (Adler, 1885, pp. 5-20).

new possibilities for the music publishing houses. When there were no restrictions on the amount of performances of a musical work (in contrast to the idea of a musical work being designed for a particular occasion, decided by the commissioner), it opened for several editions of the same work. This resulted in the practice of having the same piece of music arranged in several different editions with different instrumentations.

The multitude of publications enhanced the literacy dimension in the role of the professional performer as it now became necessary not only to be able to perform what was notated but also to be able to make an evaluation of the reliability and validity of that particular edition. This had consequences for the education of musicians, as it became vital to know something about the publishing practice to make correct assumptions about the notation in a specific edition. The accuracy in the notation of performance has gradually increased and with the flourishing publication practice in the 19th century, many musical works from earlier centuries were published, often adapted to the latest notation practice. Heavily influenced by the time of publishing this resulted in a notation of articulation and dynamics that was not in accordance with the notation practice of the composer. Knowledge of this practice is now a part of the literacy in professional classical musicianship. This development has been particularly visible in the Early music movement from the 1950s, but then not only restricted the "ur-text" of the score but also to find the right historical instruments and searching for descriptions of music performance practice in all other literate sources in addition to the score.

An important dimension of the literacy in classical music is connected to the venues of music performances. Music being a social identifier for the new bourgeois society gave way to an enhanced interest in music education as an integrated part of the general education (Allgemeine Bildung). This education was always based on printed music. As this was a way of enhancing the social status emancipated from the heritage, literacy based knowledge became necessary to be able to grasp the relation between content and context in a musical work.

In the public arena, especially in the concert house, the use of printed program indicating the different musical works became another source of literacy affecting the relation between the performance and the musical work as an artwork. This practice has influenced the understanding and conception of a musical work. The earliest programs show a combination of several parts of different works (the movements of a symphony being presented with concert arias between each movement). While the respect for a work of art made it more convenient to make a presentation without any interference of other works (or by applauding between the movements of symphony/the songs in cycles of songs!). The concert management, not the composer, might have decided the title of the work provided in the programme. The different movements were indicated by the tempo/character expression at the beginning of the movement. This practice contributed to a notion of classical music as well structured, a notion that was challenged at the end of the 19th century by music changing tempo and character several times in the same

movement.[12] The opus/numbering of a work was another objectivation signalling the distance between the performance and the idea of the work. The literacy of classical music is present in the development of a special literature on music for the audience of classical music, the concert guides, opera guides and music journals.

The venues with their position in the social hierarchy and the literature connected to the performance of classical music made a vigorous and definite relation between the content and context of classical music. This relation is still an important component in musical life today, but in the 20th century, the possibilities of recording music changed this, first by the entry of the gramophone and later by the digitalisation and distribution on the Internet.

THE FALL OF LITERACY

The musical notation became more accurate concerning expressivity in the 19th century. Categorisation of tempo and dynamics were more diversified, but the notation of melody and rhythm remained tied to the logical-mathematical notation system with roots back to Guido of Arezzo in 1030. From the Classic Era, the composers made choices that are more definite in instrumentation. Still, the accuracy of the notation of a musical work had to relate to a trustful use of tradition and knowledge between composer and performer to realise a work of art. As long as the performance took place in a traditional context, the validity of a performance was accepted based on the close relation between content and context. However, in the Romantic era, the notion of a difference between a performance and an interpretation became more and more essential in the audience.

The variety of interpretations presented in the traditional performance practice of classical music did not challenge the concept of a musical work as a unique phenomenon. Instead, this variety was necessary for establishing the idea of the work of art that could be manifested in several ways. It also opened up for a new and vital distinction between a performance and an interpretation. It was a performance when Bach performed one of his Cantatas in Leipzig, but when the same cantata was performed hundred years later the focus was on what interpretative elements did the performers took care of in that exceptional performance. This change of focus contributed to the formation of a hierarchy of performers and works.

The development of a canon of the standard repertoire of classical music developed a hierarchy of works. It also made a distinction among composers, establishing a group of highly esteemed composers above the ordinary composer. Several criteria were in function in the process of creating this hierarchy, also literacy based knowledge like an evaluation of a composer's skills in old composition techniques (counterpoint), harmony and instrumentation. These skills cannot secure the quality of a musical work, but they were used as such in the argumentation of a composer's place in the hierarchy as if they did.

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[12] There are 62 tempo changes in Schoenberg's *Verklärte Nacht* (1899) ….

The hierarchy of performances manifested the difference between amateur and professional. Amateur musicians could, of course, be technically equal to a professional, but the main difference was that the amateur performed while the professional interpreted a music work of art. In addition, many other criteria were establishing the differences related to factors such as educational background, payment, and range of repertoire.

The reliability of a performance in classical music became more and more connected to the performers' interpretation of the musical score and the literacy of that music. As long as the performances were within a social context associated with the style and genre of classical music, the context of the performance enhanced some stylistic aspects of the music (as it will do in any musical genre in its original context). In this way, classical music functioned as an important identifier of the social group attending concerts.

Being safe within the context, experimental expressions could be tried out bringing new development to the style and genre. The literacy of classical music in the 19th and 20th century has been a conceptual framework that has allowed and asked for new development. This framework consists of more than musical notation; it covers all the publishing of music and music-related literature, the music institutions (public and private) and music societies devoted to (a part of) classical music. What all these have in common is their reference to the performing of music in a concert as the ultimate point of evaluation in classical music.

When the gramophone made it possible to record a performance and after that replay the music anywhere, it represented a fundamental challenge to classical music.[13] Mostly due to the loosening of the relation between content and context of a musical performance, but also the conceptual difference between a performance and an interpretation became fuzzier as the recording technology made use of multi-track and editing processes that destroyed the connection between a performing and the end product on a record. The gramophone industry took advantage of the differentiation that was established in classical music between performance and interpretation. Several different recordings of the same piece of music became natural. In the gramophone market, the focus was not on the possibilities and enrichment interpretations of the work of art that a recording could bring the listeners, but instead, the focus was on the performer as such.

The sound quality in the acoustical era (1900-1925) was far from the concert situation, so only the most well-known repertoire was recorded. What the record could offer was a performance by one of the most famous artists, directly into your house. You did not need to belong to the socio-economical group of people that could go to concerts, at least not with the most famous and expensive artists, to buy a record. This opened up for a new dissemination of music (including its knowledge, aesthetics, and expressive qualities) in the society.

With the microphone entering the recording technology in the electrical era (1925-55), a new twist turned towards a musical life where the performer is the

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[13] (Chanan, 1995, p. 7) "… it turns performance of music into a material object, something you could hold in your hand, which could be bought and sold."

hero, the composer being secondary. The microphone also enabled a new type of artist to become popular; the crooner that did not have the skills to perform in a big concert hall could still be heard by using a microphone. The gramophone artist became a new type of musician but seldom managed to conquer the core of the classical music. However, they did bring important and new elements of musical expression to the performance practice, and there are many examples of mutual understanding in the use of expressions across different musical genres and styles.

In the stereophonic era (1955-85) the sound quality of a recording could match most of the concert arenas. It is interesting to notice the difference between LP covers for classical and popular music. The text at the LP sleeves in classical music is still trying to focus on the musical work (analysing the artistic elements) and of the composer (the genius creating the musical idea that can be appreciated in the way this record/performance/interpretation presents). In popular music, the focus is on the performer, the only text on the sleeves would relate to the artist. Gradually the cover in classical music records became more focused on the artist (Karajan being in front), but still, the text was a reminiscence of the literacy of classical music.

The digital revolution (1985-) made the distribution of recorded music an individual choice, given the access to the Internet. Then the connection between the content and context in a musical genre like classical music is totally broken. It is now possible to download isolated sound files from a recording/performance and listen to this in a situation without any connections to the context that has defined this musical genre or style. For classical music, this means the exclusion of the literacy of classical even if one obtains access to the sound of music.

As we will always listen to music in a context, the new situation with our new listening strategies, based on our individual preferences, will develop another kind of knowledge attached to music than the traditional one in classical music. More focused on the performance the new knowledge reduces the interest for the literacy of classical music and thereby reduces the importance of the reliability of an interpretation, giving more weight to the validity (right music in the right place at the right time). Traditionally, the literacy based knowledge has had the highest esteem in music criticism, but today it is those who have listened to many records that can promote their meanings to a composed public.

The gramophone record opened up for developing new listening strategies. We were not bound to the performer's performance of the music. To compensate for the lack of closeness to the human performer, a strong focus on the gramophone artist was the standard solution (in addition to technical adjustments of balance and artificial reverberation time, etc.) We could choose ourselves both where to listen and select that part of the music we would like to listen. This individualisation of listening to (classical) music made a strong focus on the expressive qualities in every moment of a performance (work). It became more important to deliver a here-and-now experience than establishing a conceptual meaning in the music over a longer period of the performance. This represents another fall of the literacy in classical music as the meaning in an interpretation of this genre is often based on the experience of the whole work concealed in a tradition where the literacy of

classical music is an important element establishing the content of the music experience.

The fall of literacy in classical music is partly a result of the dominant effect that the gramophone recordings had on musical life in the 20th century. This has given us a dissemination of classical music that goes beyond the traditional links between musical content and its social context, and as such, the gramophone industry has been essential for the democratisation of this musical genre. On the other hand, the focus on the performer in the gramophone market and the soundscape in the recordings has reduced the traditional sources for literacy in classical music.

In addition, classical recordings today are searching for giving here-and-now experiences more than presenting a work of art. This can be seen (heard!) in the use of editing procedures making every single note sounding as good as possible in the here-and-now situation. A modern recording is a patchwork of several takes and the sound on the record might have minimal connection with the sound produced by the performer. The result is a combination of qualities of the performance, editing possibilities (mastered by the producer) and an evaluation of the potential for selling this particular record on the market (a decision made by the company). In this process, many other kinds of knowledge were used. However, this kind of knowledge has no connection to the literacy of classical music (i.e. editing procedures and financial analysis of the market are not unique to classical music).

The result of this decline of literacy in classical music is a new relationship between music, performer and listener. The originally strong bonds between content and context in the classical music genre have now been perforated by the gramophone industry's dissemination of classical music to people who did not necessarily have literacy background (the right social – economic background) for attending classical music. The importance of the composer is reduced. However, the performer's role and the importance of expressive qualities in the performance are enhanced. Emancipated from its literacy platform, we could say that classical music today is about to become a performance practice based on sound, temporal movement and our aural impressions.

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4

MUSIC READING AS EYE MOVEMENT

BACKGROUND

Music reading is fundamental to anyone who wants to become a professional musician performing classical music. Nevertheless, the knowledge about the reading process is not that well known. Usually, you obtain lots of sheet music, scores and exercises with scarcely any instruction how to read/analyse the written notation. If there are some instructions, these refer to music theory concepts, and they are not based on operationalization of eye-movements. We do not ask small children to read texts as soon as they start talking, but there is a strong tradition of integrating music reading in the elementary instructions when learning to play an instrument. This happens in spite of many generations' experiences of the knowledge of music pupils with poor skills in music reading.

Interpreted as illustrations of cognitive processes, eye-movements have provided a basis for the development of theories of proficiency exercises in cognitive and behavioural psychology. In this chapter, I will present some results and ideas concerning the music reading process.[1] The link to the cognitive structure will be presented in *Music Reader: A model* at the end of this chapter.

Within literacy research, the registration of eye-movements in text reading was the essential empirical basis for the development of theories of reading skills.[2] Music Reading studies using eye-movement tracking is a small but complex branch of the reading research. Irving Jacobsen describes one of the first attempts to explore the relationship between eye movements and notation in the performance of music.[3] For a long time, eye-movement studies were only possible with the head in a fixed position, which hindered studies of music reading in active music making.[4] However, in the past 15-20 years, the technology has been standardised and mobile equipment developed for registration of eye movements.[5]

Consistently, recent music reading research projects have been particularly concerned with questions about expertise (skill levels) using rather loose definitions of musical elements (how to define tonal complexity), which has hampered the analysis of the structural interactions with music performance. In some cases, a weak connection with current theories of music perception and

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[1] I will not refer to all articles published in this area. Interested readers can quickly find the material on any search engine like Google Scholar. In addition to overview articles, I will mention some important book references.
[2] (Rayner, 1998)
[3] (Jacobsen, 1928)
[4] Overviews of the early studies found in Sloboda (1985) and Goolsby (1989).
[5] Discussion in the overview article (Madell & Hebert, 2008).

cognition prevents comparisons of different surveys. Nevertheless, as some information and facts are available, I shall attempt to present some results that I hope are relevant to performers of classical music.

MUSIC READING PROCESS

The Sheet of Music

Most cases of music reading have performance as the goal. The exception is the musicologist analysing a composition, reading the notation as a cultural document. The musical notation is a logical-mathematical graphical system founded on a regular division of the time dimension and parallelism between the notation's vertical dimension and the acoustic progress of frequency distribution (high and low tones). The notation system is most consistent with the melodic element in the musical process. In the specification of the musical time dimension as rhythmic notation, the internal relationships are retained even if the overall tempo is changed. A significant consequence of this is that it allows the same pattern of behaviour to be designed in very different visual patterns. A sequence in a largo and a presto might end up in the same operationalized action but with extremely different rhythmical notation.

Harmony and timbre/sonority have no independent dimension in the musical notation. Certainly, harmony is decoded through an analysis of vertical elements in a score or piano music, but there is no direct relationship between the notation and the various harmonic elements as they are experienced in the performance of music. The textural elements are complete without direct relation to the notation system but are indicated by specifying instrumentation and verbal expression of performance qualities. The degree of notation is also dependent on the genre and music-historical era. Timbre/sonority, dynamics and articulation constitute the plane of simultaneity in music and are fundamental in the listener's identification of the expressive qualities of music. Melody, rhythm and harmony (harmonic progression) belong to the plane of succession and are fundamental in the identification of musical works' identity. A musical experience consists of a combination of both these processes.

As a basis for performance, the notation has to be supplemented with experience and understanding of certain conventions in the relationship between notation and performance practice. Whatever level of conventional understanding the practitioner/reader may have, the performance will always establish more or less systematic deviations particularly in sonority and the temporal dimension (agogy), but also discrepancies through supplementary musical elements (melodic and rhythmic figurations, additions in the harmonic texture). The knowledge of the genre and music-historical era will also affect the performance. The degree of understanding the conventions of notation is likely to result in different music reading skills regarding the choice of reading strategies and focus points. The impact of differences in understanding of conventions in the music reading process is observable in the performance and in what skills are activated. However, the

sounding result could also be a result of the artist's playing skills being on a different level than the reading skills.

In most surveys, only music's plan of succession (Agawu's term) was represented in the score/test situation. Music's plan of simultaneity with emphasis on timbre, articulation and dynamics has been mostly absent. The conventionality in notation is most important to understanding the music' dimensions of simultaneity. To rule out this dimension is to relate to music as if music were a logical-mathematical system of sounds transferable to the notation system. This assumption is equally wrong in research as in performing practice.

Eye-Movements

When we read (text or music) we do not move the eye continuously, we stop and fixate and then suddenly move to next fixation. The move between fixations is the saccades, and in that period, we register no direct information from the text/music. Several research projects have measured the fixation time. The results are usually between 200 and 400ms. That is below our limit for registration of each fixation. 10-15% of the saccades are regressions. Good readers are very accurate in directing their eyes to that part of the text that caused the difficulty. Poor readers engage in more backtracking through the text. Studies in text reading demonstrate that semantically related words and words close to each other produce priming effects. We need just a hint of it to identify it, as we do with well-known music examples. When text or music is reread, fixation duration decreases. Readers look longer at morphemes that are more informative on the overall meaning. Usually, musicians look longer on the main theme than on ordinary scales. Fixation times on lexically ambiguous words are modulated by the characteristics of the word and the prior context. For a musician, this process is a question of knowledge of conventionality. If incorrect interpretation of a syntactically ambiguous phrase is made, fixation times on the disambiguating word increase or readers make immediate regressions. Where to put the stress in the bar/theme may be ambiguous. Special eye movement equipment has been developed to enable the registration of the eye movement and the fixation in the music at the same time. Eye tracking devices deliver the most common data in studying music reading today.

Another feature is even more interesting in music reading: the eye-hand span (sometimes called the perceptual span). This technique measures the distance between the current point of performance and the farthest point ahead of where the eye is looking. Good sight-readers usually read far ahead of what they are actually playing. Several methods of measurement have been applied: counting the number of notes ('note index') or measuring the time length between the fixation and the performed music ('time index'). However, in both cases, the tempo of the music combined with the notated metre determine the outcome. The fact that superior performers generally had larger spans suggests that information is being stored more often and in larger chunks. The number of fixations is not equal to the number of chunks as a chunk is constructed internally in response to information that may be gathered through several fixations. Musicians able to construct larger

chunks faster during time-critical activities have the advantage of having more time available for translating the visual input into motor programmes.

Musicians seem to spend more fixture on blank areas without notation than the standard text reader does. This may be because the music readers must have time to consider and detect the conventions in the notation. The fixating on blanks opens up cognitive processes where it is essential not to bring in new information but have time to process (structuring) existing body of knowledge. Fixation location is a crucial but difficult measure for music reading, primarily because the primary fixating unit in music is unknown; the situation is clearly different for text, where the word is the visible unit of fixation. However, the structure of the phrase endings serves as a sort of musical mnemonic, pulling memory to logical structural pauses.

The Performer's Music Reading

The performer's reading is a predefined process, as we can assume that there was always a learning process ahead of the music reading situations tested in the different surveys (and in a musician's life). This learning process includes both a mental processing facility of characters in the visualisation and a sensory-motor process related to the abilities and skills. These two learning processes are often closely tied to the performer's instrument, and may in some cases (especially among beginners) make the performer learn finger grips on the (melody) instrument without the (structural) framework of the notations' conventionality.

The performer's level of music reading skill can only partially be defined through the testing of eye movement studies. Such studies have so far focused (!) on the musical sequence dimensions and not taken into account items related to the simultaneity that after all exists in the notation system. There is thus little empirical evidence on how these (mainly expressive) characters contribute to the structuring of the notation of musical structures. The existing research indicates that good sight-readers can translate impressions of note characters faster, more efficiently and more in keeping with the musical phraseology than mediocre music readers. They spend less time on orienting themselves in the notation; they have fewer saccades (eye movements) and wider fixations and have probably a bigger repertoire of notation conventions presented in the mental processing facility. It is reasonable to assume that sight-readers increasingly perceive note characters as representatives of sounding entities, as opposed to those practitioners who perceive note characters as representatives of sensory-motor encoder (indicating finger positions and grip).

Approaching the Music Notation

To approach note characters in a musical context, you need knowledge about the connection between the note character and the sounding music. Such knowledge includes:

1. Knowledge of what each note sign can mean (denotation),
2. Knowledge of the codex that the notation indicates (structuring principles),
3. Knowledge of the phraseology of the actual music/style (connotation),
4. Knowledge of the conventionality applied in this notation (horizon of understanding).

These four types of knowledge may be considered as different levels in a knowledge hierarchy, from the elementary (level 1) to the professional (level 4). People who only operate at level 1 will be able to spell through a note reading assignment, but they work only on a denotative level; a note sign = finger position/grip. At level 2, the person takes advantage of the general information about signatures, tempo and dynamics commonly found in the sheet music. This person will be able to play notes in a convincing manner (advanced beginners) although the interpretation fails to be musically compelling. This failure is due to the lack of knowledge for analysing the image searching for a style of music/phraseology (level 3). The professional note reader will associate the impressions from reading the music with his/her experience of musical sounds and identify a style and phraseology as a starting point for the interpretation of note characters. Level 4 represents tests based on violating the fundamental principle of finding the simplest notation and using instead a notation that directly challenges the notation system's conventionality. To solve such tasks, the performer must liberate him- or herself from the traditional notations conventions (simplicity principles) and establish an interpretation of note characters based on a reinterpretation of the Codex (structuring principles). For example, most music printed in the 19th century use a rule like this: Accidentals are valid in the bar they appear. In the 20th century music (especially in 12-tone music), this rule had to be changed; accidentals are valid only in the position they appear. This practice included same note in another octave and in the whole bar. Such a change made it necessary to use naturals for a while, but in modern printing, there is no single rule. You have to establish enough knowledge of conventions to decide.

   All these levels of knowledge presuppose that there is a memory in the form of cognitive structures that can be activated. Such cognitive structures are the result of motor (bodily/embodied) processes, sensory-perceptual and cognitive processes. These structures are important in establishing the pulse feeling (music temporality). As the notation system's rhythmic elements operate with relative time units, the pulse has an enormous impact on the structuring of time and progress in the music. To establish the connection between the notes on the sheet of music and the sounding music in a performance, there is a need for activating cognitive structures that operate our motor system/bodily actions/presumptions. Cognitive structures are fundamental in the development of the inner ear (the ability to discriminate different sources in a musical context). Approaching a musical notation involves cognitive processes not limited to the notation or the acoustic sounding music, but rather should be considered as an activity where different areas of knowledge interact.

Action

All studies of music reading situations confirm that musicians have a visual span in fixations comprising more than a single tone. This would indicate that the (static) information coming from the eye must be converted to sequential action impulses. Such a transformation would not be possible without access to cognitive structures. The triggering of a sequential action impulse means that there is not one specific action impulse for each note character. Action impulses will include a cluster of notes. There will probably be differences between the musicians' skill level developing action impulses. Advanced music readers will transform the visual impression of the notation to a group of tones (sounds) with their associated sensorimotor orders for execution. The weak note readers will convert the notation to a sensorimotor order without a conception of the sounding result.

An action impulse is a decision chosen among possible interpretations. These preferences contribute to understanding of genre and context in the present notation. The action impulse also affects the activated cognitive schemas by being adapted to the current situation (through differentiation, consolidation, generalisation and association with other cognitive schemas) to realise the interpretation.

Performance

The performance is a physically observable event, but it also includes a variety of sensory and perceptual processes related to performance on the instrument. These processes are running concurrently with the note reading and partly independently of the choices that need to be taken in the interpretation of the notation. In a performance, several issues might emerge: is the instrument well-tuned/in tune, does it have the right sound, is the embouchure in shape, are fingers warm and soft enough, tongue ready for advanced articulation, has the body a sufficient support of sound. These are all examples that may be relevant in any performance situation regardless of the use of notes.

Some impulses to action, however, will face hostility in the body since they indicate an exercise that goes beyond the skill or the sensorimotor basis that the performer has now. Such resistance will lead to a raising of the level of tension in the body, but it will also affect the interpretation of note characters. He/she can alter the perceptual basis for interpretation through ignoring the problem or change the focus through regrouping the priorities in the interpretation of sheet music. (Faking in a convincing way!)

The sensorimotor development of cognitive structures (schemata) in skill development affects the practitioner's music reading skill. The impulses to act are linked to the level of skills and are initially established as a possible relationship between skill implementation and the appropriate notation. The practitioner's repertoire of cognitive schemas ("vocabulary") related to music reading is expanded through differentiation, consolidation, generalisation and association with other schemas. These processes are particularly relevant when learning

elements in improvisation and standard figures. The musician's understanding of genre is related to the linkage of those cognitive schemas with elements of knowledge from other domains than music reading and skill practice (e.g. history of culture, persons and places). Such knowledge elements (structured as cognitive schemas in our consciousness) may also affect the actual interpretation of the notation, and they could have an impact on the proficiency exercise by contributing to the holistic perspective that is often present in the performance.

Sound of Music

The musician generates an acoustic soundscape observable as a physical event and experienced by listeners as a music performance. There is a feedback when performers connect the sound to the reading of the notation, but perhaps even more important is the feedback in relation to the interpretation of note characters. This is probably because the performing musician is most concerned about how the music sounds and is simultaneously aware of the notation's deficiency; therefore, he/she will emphasise the relationship between the sounding results and the interpretation of the note characters more than the relationship between the sound and the written objects. If it sounds good, minor deviations from the music notations are acceptable.

<div align="center">DESIGN OF MUSIC NOTATION</div>

The conventionality in music notation makes it natural for a musician to assess what kind of notation practice is used in that particular piece of music, to clarify the scope of the expression means to be used in the performance. For example, the symbol *f* indicates one degree of dynamics if this is the strongest character, but something else if *fff* is present in the same piece. Similarly, the absence of articulation signs (staccato, legato, accents, etc.) does not indicate renunciation of these expressive means. The musician should read any notation as an impulse to develop an interpretation designing the piece by appropriate articulation signs within the character and style that the piece represents.

    The melodic notation will generally follow the principle of making the notation as simple as possible. However, the claim for clarity in tonal progressions of harmonies is sometimes a complicating factor in the notation of pitch. The visual impact is clearly observable in the rhythmic notation, where the choice of note length of the pulse has significant consequences for the design of notation, although the internal rhythmic relationships remain the same.

    Regarding the design of the particular music material, many studies suggest that increased complexity in the notation creates greater challenges for the note reader. However, in the various surveys on what contributes to the increased complexity in the notation, there are no explicit, general classification criteria. One way to differentiate the complex nature of musical notation will be the following division into three levels: 1) simplified notation without dynamic and expressive character, 2) "normal" notation with dynamic and expressive character, 3) distorted notation

(rhythmic and melodic) with dynamic and expressive characters. Level 1) requires that the musicians add dynamic and expressive characters based on their knowledge of style and genre (structuring knowledge). This knowledge is also relevant at level 2, but now more related to developing an interpretation (knowledge of connotation). At Level 3 the notation is still within the logical-mathematical structure of notation but appears to be unnecessarily complex visually.

Skill Dimensions

Although some ability-related elements are active in a musician's conversion of a sheet of music to a musical performance, most investigations have had an emphasis on the note reading as skill. To draw the distinction between abilities and skills is sometimes difficult. It may be so because the music has a double ontological status; a musical work is both an object, and it is an experience. The contribution from the musician realising a noted music will be composed of many kinds of knowledge. Most note reading tests operate with proficiency as an important parameter of achievement. The division into good and poor music readers sometimes leaves out controlling the practitioner's skills prior to the test.

There are some studies on the effects of brain damage on music reading and text reading, where the tendency seems to assume two unique neural subsystems working by text reading and note reading respectively.[6] However, other studies demonstrate common areas for text reading and note reading. We may assume that the differences between text reading and note reading stem from unequal position within a competence hierarchy. If the possibilities of adopting certain types of reading strategies (for example progressive fixations) is related to the test person's level of skills and not to the material, previous experiences will become critical conditions of music reading.

The background experience is essential considering whether results are due to note reading skills or practitioner skills. A musician's background/experiences can also influence the degree of accuracy/intensity in performing the musical expectation generated from the notation. This will, in turn, have an impact on the efficacy of auditory feedback. Hierarchies within the tonal music and their significance for the musical expectation has been featured in some larger contexts,[7] but this has not resulted in many studies of eye-movement.

Music Reading, A Model

To sum up, some of the most important steps in the music reading process I have made this model which simplifies several distinctions and concepts, (differences between cognitive, perceptual and sensory processes) and demonstrates only a few feedback processes. I hope the model illustrates the complexity in music reading,

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[6] (Hébert & Cuddy, 2006)
[7] (Huron, 2006; Krumhansl, 1990; Lerdahl & Jackendoff, 1996)

taking into account eye movement studies, cognitive operations and the double ontological status of music being both a physical object (the sheet music) and a phenomenon (the musical experience). In developing your music reading skills, this model demonstrates the need for practising across several dimensions and acquiring different kinds of knowledge.
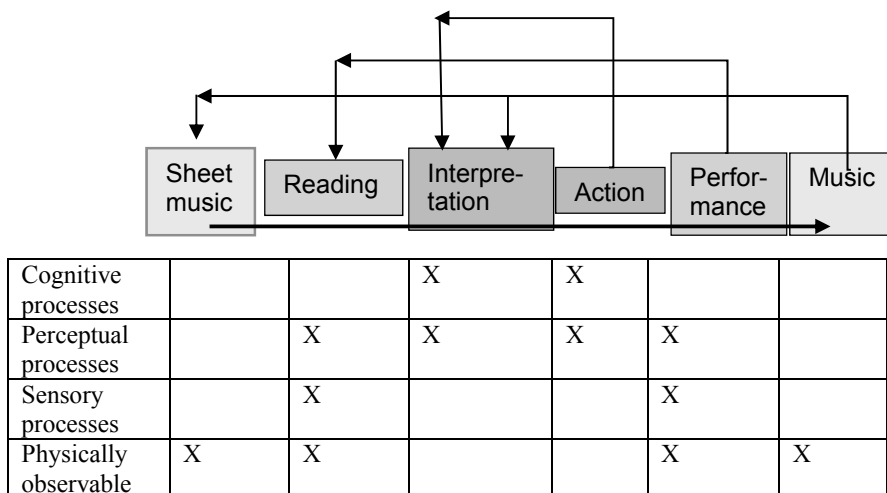

	Sheet music	Reading	Interpretation	Action	Performance	Music
Cognitive processes			X	X		
Perceptual processes		X	X	X	X	
Sensory processes		X			X	
Physically observable	X	X			X	X

Figure 3. A simplified model of music reading

   As objects, the sound of the music performance will affect your interpretation and inspire you to check the outcome with the printed music. If something sounds strange or unexpected, you would have a feedback to your reading of the music, open up for an alternative interpretation. The feedback from Performance to Reading is constantly working, and it overrules the indicators in the reading process. It is worth noting that the action impulse does not come from the reading but is a result of the (cognitive) interpretation of the impressions from reading. Therefore different musicians may perform the same music differently even reading from the same sheet music when their interpretations are unique.

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PART II

METHODOLOGY

This part of the book will present and apply different methodological traditions to a performer's situation as a foundation for artistic research. 'Methodology' includes the following concepts as they relate to a particular discipline or field of inquiry: A collection of theories, concepts or ideas. A comparative study of different approaches. A critique of individual methods. I will use the same basic model of investigation to illustrate the various methodological perspectives. It consists of the following three elements: Observer/Observation – Sign/Theory and Consequence/Context. The presented methods have different foci. I will start with the Hypothetico-deductive method, the most common procedure in science searching for knowledge about observable objects, and then I continue with Semiotics, questioning the relation between observation/experience and language (sign and symbol). Moving one more step to Hermeneutics, I elaborate on the expression of the sign/symbol and its relation to the context and the observer. Music experiences as a phenomenon are used to present some fundamental traits in Phenomenology necessary to complete the observer's position.

There is a parallel between this procedure and a musician's line of action studying a piece of music. The sheet music/score is an object representing the music. The information will be organised using a hypothetic-deductive method. Then, semiotic knowledge can be used for revealing the conventions of notation in the music. When performance is the goal, the hermeneutic considerations are important in developing an interpretation. Such considerations involve a self-reflection upon your development in musical knowledge and understanding of the musical phenomenon. This parallelism is also a reason for me to present an additional chapter raising some recurring issues in music (theory) discourses to each presentation of a methodology.

Methodology refers to the rationale and the philosophical assumptions that underlie a particular study. The overall goal is to secure that the knowledge acquisition in the research will give us new possibilities. Within each methodology, several methods have been developed for conducting research on particular topics. The history tells us that the most significant output of science is knowledge, and so the aim of methodology should be to discover those methods by which scientific knowledge is generated. I will not discuss methods in detail, as the purpose of this part of the book is to illustrate how different methodologies can be applied to a performer's situation. They represent a level of knowledge (sufficiently abstract) that makes a transfer to musicianship relevant. At the same time, I prefer to refer to knowledge (in the wide sense of that concept) rather than restricting it by adding 'scientific' as there is a strong tradition linking 'scientific' to Hypothetico-deductive method only.

HYPOTHETICO-DEDUCTIVE METHOD

INTRODUCTION

The activities most often identified as characteristics of science are systematic observation and experimentation, inductive and deductive reasoning, and the formation and testing of hypotheses and theories. In many settings, these features have been looked to as a way of demarcating science from non-science. The debate that is more recent has questioned whether there is anything like a fixed toolkit of methods common to science and only science. The reorganising of higher education during the last decades, where music academies and music conservatories (as well as other artistic, educational institutions) became part of universities, heightens the discussion on what is scientific knowledge. In the traditional divide between humanities and science (Geistwissenschaft und Naturwissenschaft)[1] the arts institutions promoted artistic research where the artist is the researcher as an alternative method acquiring knowledge.

In history, Aristotle is recognised as providing the earliest systematic treatise on the nature of scientific inquiry in the Western tradition, one which embraced observation and reasoning about the natural world.[2] He divided reasoning primarily into two forms as deductive versus inductive method. The basic idea is to proceed with our inquiry; one direction is away from what is observed to the more fundamental, general and encompassing principles (induction). The other leads from the fundamental and general principles to other possible specific instantiations of those principles (deduction). Reading text/sheet music by spelling each element until you identify a style is an inductive method. Reading a new text/sheet music knowing some principles of style (based on information about the composer) and applying your knowledge to your practice is a deductive approach. During the scientific revolutions in the 16th-18th century, The Book of Nature, a metaphor used by Galileo Galilei (1564-1642) and Francis Bacon (1561-1626),[3] was written in the language of mathematics, of geometry and number. This motivated an emphasis in a mathematical description and mechanical explanation as important aspects of the scientific method. It also had an impact on the choice of topics relevant to scientific inquiry enhancing music theory at the sacrifice of musical practice. A method of which the true laws of nature could be discovered should then consist of three phases: (1) Clarification of fundamental concepts, (2) Clever inventions of explanations, and (3) Careful testing. These three phases

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[1] (Scott & Marshall, 2005)
[2] (Aristoteles, Ross, & Adler, 1990)
[3] (Bacon, Bacon, Descartes, Spinoza, & Adler, 1990)

could be recognised in a performer's practice as well: (1) Clarification of the context of this music. Today the process would include the search for critical editions and ur-texts. (2) Invention of explanations is applying knowledge of style and musical imagination to develop an interpretation. (3) Careful testing is equivalent to practice, practice, practice. The reason why playing music never reached the level of true laws of nature is mainly connected to points (1) and (3). There has never been a total agreement about what concepts are fundamental in music, and even if the practice can be seen as a kind of trial and error activity, it is very seldom done in a careful (scientific) way.

The most significant development in methodology in the 19th century was positivism. The proximate roots of positivism lie in the French Enlightenment, which stressed the clear light of reason and in 18th-century British empiricism, particularly that of David Hume (1711-1776)[4] and George Berkeley (1685-1753), which stressed the role of sense experience.[5] Information derived from sensory experience interpreted through reason and logic functions as the exclusive source of all authoritative (universal) knowledge. This makes positivism a difficult approach to the musical experience. We do have many sensory experiences, and our interpretations might be reasonable, but the logic does not support an authoritative kind of knowledge. The modern approach was formulated by the philosopher Auguste Comte (1798-1857) in his *Course de philosophie positive* (1830-1842). He saw a parallel between the evolution of thought patterns in the entire history of humankind and the history of an individual's development from infancy to adulthood. In the first of three phases, the theological stage, natural phenomena are explained as the results of supernatural or divine powers. Such explanations are rejected as primitive projections of unverifiable entities. The second phase, called metaphysical, is in some cases merely a depersonalised theology: the observable processes of nature are assumed to arise from impersonal powers, occult qualities, vital forces or entelechies (that which realises or makes actual what is otherwise merely potential). Again, Comte charged that no genuine explanations result; questions concerning ultimate reality, first causes, or absolute beginnings are thus declared to be absolutely unanswerable. I think we have to admit that most of the discourse in music can be placed within these two approaches. According to Comte the sort of fruitfulness that this method lacks can only be achieved in the third phase, the scientific, or positive phase because it claims to be concerned only with positive facts. The task of the sciences and knowledge in general is to study facts and regularities of nature and society and to formulate the regularities as (descriptive) laws. Explanations of phenomena can consist of no more than the subsuming of special cases under general laws.

The development of statistical analysis made tremendous progress using testing procedures carefully organising the empirical consequences. However, the inventions of explanations interpreting the results can never be taken as confirming

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[4] (Hume, 1739)
[5] The English noun positivism was re-imported in the nineteenth century from the French word *positivisme*, derived from *positif* in its philosophical sense of "imposed in the mind by experience."

evidence to a hypothesis. The difficulties with inductive inference made Karl Popper (1902-94)[6] propose the search for falsification of the hypothesis as a way of knowing where the truth is not, and by that avoid mistakes and mistaken interpretations.[7] He also introduced the notion of corroboration (validation) as a measure for how well a theory or hypothesis has survived the previous testing – but without implying that this is also a measurement of the likelihood of its being true. This last situation is rather common in musical life. A performance might be accepted as valid (in the social context of the performance) even if the performer does not have the feeling of haven a reliable interpretation.

Another attack on the three-phase model came from Thomas Kuhn (1922-96).[8] His examination of the history of science revealed that scientific development occurs in alternative phases. Every science must be understood in relation to its basic constituting (fundamental) assumptions which Kuhn calls a paradigm. The history of science can then be described as a three-phase process from

- Pre-paradigmatic science (different approaches, low precision, metaphysical arguments, what do we observe? What can we know?), to
- Normal science (underlying problem seems solved. Well defined research area, articulation of the paradigm), to
- Scientific revolutions where anomalies will intensify the hunt for another paradigm.

The new paradigm has to be logically uncoordinated with the old one on at least one level, i.e. there has to be incommensurability between the paradigms. As a kind of knowledge acquisition, music seems to belong to the Pre-paradigmatic sciences. The many styles (approaches) of expression, blurred boundary between styles, metaphysical arguments both on performers' practice and in music theory are all indications of a pre-paradigmatic stadium.

Paul Feyerabend (1924-1994)[9] also identified the aims of science as progress, but argued that any methodological prescription would only stifle that progress. The only rule that could provide what he took to be sufficient freedom was the vacuous "anything goes". He would argue that even the methodological restriction that science is the best way to pursue knowledge, and to increase knowledge, is too restrictive. In one way, science might be a threat to a free society because it and its myth had become so dominant.

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[6] (Popper, 1968)

[7] In statistics, a null hypothesis (H_0) is a hypothesis (scenario) set up to be nullified, refuted, or rejected ('disproved' statistically) to support an alternative hypothesis. When used, the null hypothesis is presumed true until statistical evidence, in the form of a hypothesis test, indicates otherwise—that is, when the researcher has a certain degree of confidence, usually 95% to 99%, that the data does not support the null hypothesis. In statistics, a result is called statistically significant if it is unlikely to have occurred by chance.

[8] (Kuhn, 1962)

[9] (Feyerabend, 1993)

The quantum and relativistic revolutions in physics in the early 20th century had a profound effect on methodology. The conceptual foundations of both of these physical theories were taken to show the defeasibility of even the most seemingly secure common-sense intuitions about space, time and physical bodies. It became impossible to start with pure observation; all observation was theory laden. To a performer, the common-sense intuition would be the idea of musicianship as an ahistorical knowledge. The way we perform music today is different from what they did several years ago, as documented by a hundred years of recordings. Therefore, it is of great importance to accept the magnitude of methods we can use in different contexts to become a better musician.

THE HYPOTHETICO-DEDUCTIVE METHOD

In its simplest form the Hypothetico-Deductive (H-D) method is based on the idea that theory, or a sentence of that theory which expresses some hypothesis, is confirmed by its true consequences. Through observation and experimentation, you can confirm the hypothesis by showing how a consequence from the deduction of the hypothesis explains the observations. In performance practice, musicians use this method all the time. Based on their idea of the style (Hypothesis) they adjust their playing (Deduction) in the actual piece of music. Science in the Aristotelian tradition uses his grid of syllogism to develop deductions. Two fundamental insights have reduced the importance of syllogism. One is that the connections between most words and the ideas or objects they signified are considered arbitrary (*dog* in English, *Hund* in German, etc.). Nonverbal sounds signifying emotions, on the other hand, appeared more inherent and less variable, and, therefore, more universal. In both cases, the use of literate concepts was no longer a guarantee for representing the world. The other perspective could be summarised as this; if the language could describe the whole world and all phenomena, there would be no need for music and musical expressions. Therefore, human sciences need another method in addition to the H-D method (see next chapters).

   There are several pitfalls in applying the H-D method. One is the question of what is a true consequence. When there is a mismatch between the deductive consequences and the observations or results from experiments, it is rather easy to conclude that the hypothesis is false. Applying this to style-interpretation I would say; sometimes the sheet of music can indicate several different styles, and if you happen to choose the wrong one, the discrepancy easily becomes evident when playing in an ensemble. Harder to accept a situation where the observations completely confirm the implications, but it does not need to be a confirmation of the hypothesis. The reason is that several hypotheses might be relevant to a set of observations.[10] To continue my example of having an idea of style, it might happen

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[10] Hempel (1965) pointed out that if an observation confirms a given hypothesis, it also confirms all other hypotheses that are logically equivalent to it. For example, the generalisation 'all ravens are black' is logically equivalent to 'all non-black objects are non-ravens'. Then an observation of a black raven, a red herring and a white shoe would therefore all confirm the hypothesis that ravens are black.

that after playing several pieces by a composer may provide you with an idea of how to play music by that composer. If you apply that idea of style to his total oeuvre, you might fail to convey nuances that would be essential for making the interpretation both valid and reliable.

The main problem is the inductive procedure in observations. Firstly, all observations are theory laden. Either we are conscious about our theoretical platform, or we are not aware of goals and concepts relating to our observations; our senses structure our impressions to make observations fit our expectancies. This process is very convenient in everyday life but can make some obstacles in our search for new knowledge and deeper insight into some phenomena like music. Secondly, what has been called 'the inductive gap'—to infer from several instances to a general statement, from some to all, intervening not only the confirmation of the observations but also in the development of a hypothesis, as hypotheses and theories often are often built on observations.

Bacon's Idols

In the H-D method the process of developing hypotheses is based on observations, and in searching for true consequences observation is inevitable. Francis Bacon's method was grounded in a methodological collection of data and observations, coupled with correction of the senses. In his Novum Organum (1620), Bacon outlined a new system of logic, which he believed to be superior to the old ways of syllogism. He developed a scientific method, consisting of procedures for isolating the formal cause of a phenomenon (heat, for example) through eliminative induction. For him, the philosopher should proceed through inductive reasoning from fact to axiom to physical law. Before beginning this induction, though, the enquirer must free his or her mind from certain false notions or tendencies, which distort the truth. These are called "Idols" (*idola*), and he listed four kinds of systematic errors to which naïve observers are prone:

1. "Idols of the Tribe" (*idola tribus*), which are common to the race and refers to a tendency of human nature, to prefer certain types of incorrect conclusions.
2. "Idols of the Cave" (*idola specus*), which are peculiar to the individual; The *idola specus* are prejudiced, by which individuals inappropriately extend norms or tenets that derive from his or her culture and social group, or to his or her preferences. Racism, sexism and, more generally just "biases" are examples of *idola specus*, but the concept goes beyond these categories to the criticism of all forms of irreflexive subjectivity or individual predisposition.
3. "Idols of the Marketplace" (*idola fori*), sometimes translated as "Idols of the Forum," are a category of logical fallacy, which results from the imperfect correspondences between the word definitions in human languages, and the real things in nature which these words represent.[11]

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[11] In Novum Organum Aphorism LIX: But the Idols of the Market Place are the most troublesome of all—idols that have crept into the understanding through the alliances of words and names. For men *(continued)*

4. "Idols of the Theatre" (*idola theatri*), which stem from philosophical dogmas. Since, alone among all the idols, they are created by philosophical systems, alone, among all the idols, they may be removed by philosophical systems.

Transformed into a performer's situation in music reading we can recognise idola tribus as our limited horizon of knowledge when we start learning to read music. The meaning of the notes is closely connected to the context of their appearance. We are (unconsciously) driven by idola tribus when we characterise musical genres outside our practice using criteria developed for the practice of our genre. In a next stadium of learning to read music, we might see conformity where there is no equality (idola specus). The genre of 'world music' can be seen as an idola specus, using sound elements of folk music in new contexts and thereby reducing the identity of each element. The Idols of the Marketplace are characterised by the lack of division between sign/symbols and their expressive potential/facts of the case. Quite often we can see that the audience/listener fail to separate between the performer's performance/action and the performance's product. Both performers and listeners can experience the idola theatre believing in authorities. The hierarchy of artists in the gramophone market, in opera houses, among international impresarios, is not a result of the performer's products alone (the objective sound) but results from combining the product with the impressions of the performers' actions (not necessarily of musical expressions) as well. The result is a lack of division between the ideology and the context. Artists with a long and successful career sometimes continue touring, and it is mostly their fans that still find it extraordinary meaningful (usually people who have followed the artist's career from the beginning). Nevertheless, Idols of Theatre is the possibility that opens up for arranging concerts in places that are non-contextual to the repertoire (like playing classical music in department stores and industrial plants), believing that music (its ideology and expressive power) can overrule the context (the venue).

Statistical Methods for Hypothesis Testing

Despite the many difficulties that philosophers encountered in trying to provide a clear methodology of confirmation (or refutation), important progress has been made in understanding how observation can provide evidence for a given theory. Statistics has come to play an increasingly important role in the methodology of the experimental sciences from the 19th century onwards. At that time, statistics and probability theory acquired a methodological role as an analysis of inductive

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believe that their reason governs words, but it is also true that words react on the understanding. Now words, being commonly framed and applied according to the capacity of the vulgar, follow those lines of division, which are most obvious to the vulgar understanding. And whenever an understanding of greater acuteness or a more diligent observation would alter those lines to suit the true divisions of nature, words stand in the way and resist the change.

inference and attempts to ground the rationality of induction in the axioms of probability theory have continued throughout the 20th century and into the present. Four levels of measurement are used:

- Ratio measurements have both a meaningful zero value and the distances between different measurements defined; they provide the greatest flexibility in statistical methods that can be used for analysing the data.
- Interval measurements have meaningful distances between measurements defined, but the zero value is arbitrary.
- Ordinal measurements have imprecise differences between consecutive values but have a meaningful order to those values.
- Nominal measurements have no meaningful rank order among values.

Taking music notation as a measure of music, we can find some resemblances. We could say that the ratio level is represented in the notation of pitches. However, the concert pitch has to be decided to reach a ratio level (and you have to be aware of transposing instruments). The rhythmic notation is an interval measurement (statistically), as there are meaningful distances between the measurements, but no zero value. The tempo in performing a rhythmic motive is decided by measurements on the ordinal level like adagio, allegro. At the nominal level, we find the metaphorical expressions giving a hint of the character of the music.

The structure of hypothesis testing became more or less regulated by statistical concepts and procedures as in this recipe for research:

1. Define the research hypothesis and set the parameters for the study.
2. Set out the null and alternative hypothesis (in other words, a number of hypotheses).
3. Explain how you are going to operationalise (that is, measure or operationally define) what you are studying and set out the variables to be studied.
4. Set the significance level.
5. Make a one- or two-tailed prediction.
6. Determine whether the distribution that you are studying is normal (this has implications for the types of statistical tests that you can run on your data).
7. Select an appropriate statistical test based on the variables you have defined and the distribution
8. Run the statistical tests on your data and interpret the output.
9. Accept or reject the null hypothesis.

I do think musicians can identify several of these elements in their rehearsing procedures for studying a new repertoire, though with a different end product.

1. Define what kind of music this is, and what kind of expressive characters can be used in this music.
2. Decide the goal of the interpretation, and what it should not be (null hypothesis).
3. Consider carefully your rehearsing strategies.

4. Set the level of acceptance (your performance compared to other performances you know).
5. Usually, we think of the tradition of performance practice as a background for one-tailed prediction, (we think we are getting constantly better), but innovative interpretations do challenge that view of the tradition.
6. The normal rehearsing situation, in classical music at least, involves the use of notated music, an element of importance when testing the results.
7. The most used test situation is either a concert performance or performance in a supervised position. The (statistical) variables defined and the distribution pops up as questions of reliability and validation in a performance situation.
8. Feedback from the audience, musicians and teachers are mostly quality laden (oral) utterances not suitable for statistical tests, even though they do influence your interpretation of the output/performance.
9. Then you can go back to your rehearsing room and accept or reject the null hypothesis. In both instances, you need to practice more!

Methods for measuring the uncertainty of observations, criteria for the rejection of outliners, and the development of significance tests, caused statistical methods to move to the core of scientific research. These developments led to a discussion among statisticians and philosophers of science on how to perceive the process of hypothesis testing. Could rigorous statistical inference provide a numerical expression of the degree of confidence in the tested hypothesis, or should it be seen as a decision between different courses of actions that also involved a value component? Should a hypothesis be rejected by evidence if the evidence would be unlikely relative to other possible outcomes, given the hypothesis was true, or should the consequences of error also play a role in rejecting when deciding between hypotheses? In line with the second view, a distinction was introduced between the error of rejecting a true hypothesis (type I error) and accepting a false hypothesis (type II error). The argument was that it depends on the consequences of the error to decide whether it is more important to avoid rejecting a true hypothesis or accepting a false one.[12]

Statistics in Interpretation

If we take musical ideas as a parallel to hypotheses, we use quite a lot of unconscious statistical analysis in developing an interpretation of a musical work. Observations when reading a sheet of music involve a process of reducing the uncertainty in each object/element on the page. To be more conscious about what kind of method (actually the statistical analysis) you use in this process will enhance the possibility of developing a reliable interpretation. To detect misprints

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[12] In recent decades, philosophical discussions of the evaluation of probabilistic hypotheses by statistical inference have largely focused on a (Bayesian) understanding of probability as a measure of a person's degree of belief in an event. This is in opposition to the frequentist's understanding of probability as a long-run frequency of a repeatable event.

or to decide whether there is a misprint is parallel to a rejection of outliners and you need to know the criteria in use. As a student, the significance test is comparable to participating in a master class where all have prepared the same piece of music but perform it differently. Statistical significance is defined as the extent to which a result is unlikely to be due to chance alone. In an audition for a job in a professional orchestra, it is important to give an impression of knowing the style and musical ideas of the repertoire and how this orchestra interprets this music. Your presentation (result) should be unlikely to be due to chance. In the master class situation, the significant statistical elements in the different interpretations would be those elements that were common in all performances. However, at this point (that is in presenting an interpretation), the link to statistics becomes less relevant. Not all musicians need to play the same piece in the same way. Actually, we search for individual expressions and creative construction of meaning in new interpretations. In developing such an interpretation, we can still have some help from statistics in deciding what expressive elements are most suitable to the piece. Awareness of the distinction between type I error and type II error can contribute to alertness towards the meaning construction in the interpretation. When giving this particular element in the score a certain musical expression, does this choice obstruct a true interpretation (hypothesis), or do I risk leaning towards a false hypothesis? Remembering that the interpretation should be both reliable and valid, it seems that the questions related to the conflict between types I & II error are mostly connected to reliability. To what extent should the interpretation use expressivity associated with Romanticism when playing repertoire from other epochs? In evaluating such a performance, the reliability criteria are rather constant, but the validation of the interpretation would depend strongly on the venue and the social context of the performance.

THE SCIENTIFIC METHOD

The Hypothetico-Deductive Method is the method most associated with science and will be used as an illustration of all kinds of knowledge acquisition. To make the model applicable to other methodologies, I have extended the basic elements of the H-D method by including the process of developing a hypothesis. The understanding of a scientific method usually involves a procedure starting from observation and description of a phenomenon (that might be either a physical object or a state of mind/experience/idea), progressing through the formulation of a hypothesis that explains the phenomenon. Subsequently, experiments to test the hypotheses, analyse the result and finally with drawing a conclusion. A search for practices that drive conceptual innovation has led to the examining of both the reasoning practices of scientists and the wide realm of experimental practices that are not directed narrowly at testing hypotheses that constitute exploratory experimentation. In the extension of this search for exploratory experimentation, artistic research has developed as an independent research practice. In addition, within traditional science, we find argumentation that new scientific concepts are constructed as solutions to specific problems by systematic reasoning, and that of

analogy, visual representation and thought-experimentation. However, this has parallels in the development of performance practice. The Historical Informed Practice is a new practice (new scientific concept) constructed as a solution to problems accepting the existing practice performing Baroque music, and by analogy now extended to other periods as well. The use of visual representation and thought-experimentation is common in all teaching of interpretation in music.

Today there is an apparent lack of consensus among philosophers and historians of science about the nature of science. A description that "scientific knowledge differs from other kinds of knowledge, especially everyday knowledge, primarily by being systematic,"[13] makes it difficult to include artistic knowledge as part of science. Nevertheless, systematism can have several dimensions, among them are; more systematic descriptions, explanations, predictions, defence of knowledge claims, epistemic connectedness, an ideal of completeness, representation of knowledge and critical discourse. Science does not differ in kind from other kinds of inquiry, but it may vary in the degree to which it requires broad and detailed background knowledge and familiarity with a technical vocabulary that only specialists may possess. In other words, what characterise science is not that the methods employed are unique to science, but that the methods are more carefully employed. In Part III I will elaborate on the characteristics of and challenges in artistic research.

How knowledge acquisition can be scientific, artistic, or based on everyday common sense, is illustrated in a model. However, it is necessary to make interpretations of each element within the model in the context of the chosen perspective/method. Contrary to the tradition of reading from left to right, and to illustrate historical development from left to right, I will illustrate the procedure of knowledge acquisition from right to left. The positive effect of this will be the possibilities of analogy to several methods in the next chapters. The model makes a fundamental distinction between the world/reality and our possibility to observe the world. The distinction between theory and method can be more blurred, depending on the discourse in use.
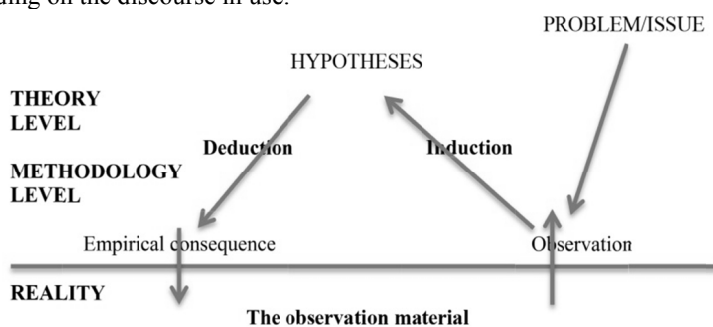

Figure 4. Flow chart of investigation

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[13] (Hoyningen-Huene, 2013, p. 14)

The starting point is when some observations trigger a search for understanding, an issue or represent a problem. That observation material can be a sheet of music, an interpretation at a concert or a recording (among many phenomena in the musical world). In developing a hypothesis we usually collect observations in an inductive way (be aware of Bacon's Idols!). From the hypothesis, we deduct other possible instances having the same characteristics as our observations. The H-D method is dominant in natural sciences and includes a lot of restrictions how to formulate the hypothesis, how to deduct empirical consequences and how to use of statistical analysis in drawing conclusions.

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WHERE IS THE MUSICAL WORK?

INTRODUCTION

Music as a human activity is much older than our idea of a musical work. The need to name/label a piece of music as something unique is traceable to the increasing literacy in music in the Western culture. The uniqueness reflects a wish for differentiation and identification, whereas the labelling is an effective tool in the dissemination of the different musical works. In the Baroque Era, we find the first examples of assembling several compositions of the same kind (concertos, sonatas) in a unit and using Opus numbering. Nevertheless, few compositions used in public had an opus number. At the turn of the 19th century, the practice had changed and presenting your Opus 1 to a publisher was somewhat like an apprentice's piece of work entailed being accepted as a professional composer. The upgrading of human skills and common sense in the Enlightenment opened up a new discourse in which the performer came to occupy an important role in music. C. P. E. Bach, L. Mozart, and J. J. Quantz wrote their important books on performing in the 1750s.[1] In addition to illustrating different practices in relation to musical notation, these books also presented general views on how to perform with expression. A third perspective was how to communicate with the audience. We can read from Mozart and Haydn's letters that they considered the listener's reactions and expectations while putting together different musical elements in their compositions.[2]

During the Romantic period, the predilection for labelling musical works made many composers mad/angry. However, the concept of a musical work as we employ it today is rooted in a practice closely related to the bourgeois revolutions and their first hero Beethoven.[3] The new bourgeoisie society regarded music as art and not only a gift (from God) or just a matter of handcraft. Music institutions (orchestras, concert houses, opera houses) and public concerts combined with international publishers' printing music disseminated to a broad audience. It soon became evident that performances of the same piece of music could appear as different interpretations. These experiences enhanced the need for a concept of the work of music as something constant and independent of the actual performance.

Reinforced by the revolutionary and Romantic Movement, the new idea of music as an aesthetic object became essential in the 19th century, and the concept of music made a paradigmatic shift. The old division between music as a performance practice and music as a theoretical discipline continued, but the new

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[1] (Bach & Schwickert, 1780; Mozart, 1956; Quantz & Reilly, 2001)
[2] (Taruskin, 2010)
[3] (Goehr, 2007)

bourgeoisie made utterances of their musical experiences a significant contribution to their enlightened identity. Like the ear, along with the other senses in general, began to challenge the mind as a source of knowledge, music as art became a central element in their education (Bildung). This intellectualisation was quite different from the rationalisation of music that had dominated music theory since Pythagoras.[4] The new bourgeoisie took ownership to the evaluation of (new) music presented by the commissioner (traditionally the King, aristocracy, or church) and began organising music institutions like orchestras, concert houses, and music conservatories, where music became an art form. While traditional music theory searched for general (natural) laws in the sounding object, the new concept of music as art opened for an individualistic diversity concerning the knowledge of music.

Nevertheless, as discussions on musical matters became an identity maker of the bourgeoisie, the need for a conceptual frame validating the arguments established music criticism as a literate discourse in printed publications. The arguments could be originated in personal experiences, and as equality was one of the fundamental characteristics of this society, the reliability of a reference to the critic's appreciation of the music was not questioned. The argument's adherence to the tradition became the central element in validation. In this situation, not only traditional music theory but the craftsmanship, both in composition and in performance, became of great importance as points of reference. The impact of the critic's theoretical concepts in music was of great importance for developing the identity of music criticism. It also made a great impact on the performers' and listeners' concepts of music. To balance between traditional music theory with its focus on lawfulness and search for ontological definitions in music, and the listener's perspective including the epistemological dimension in the appreciation of music became the main challenge in the world of music criticism.

Language constructs reality rather than merely reflecting it. (I will elaborate on this in the next chapters.) Hence, the languages we use for music, stories, narratives, theory concepts, the different discourses, help us to determine what music is, what we mean by it, and what it means to us. When we use the word "works" talking about musical works/pieces, it reflects the underlying culture of the traditional industrial economy, which was based on the production of goods that were subsequently distributed and finally consumed by the public who purchased them. Musical culture described as a process of creating, distributing and consuming became the ideological background to the nineteenth-century concept of 'musical works.' This link to the world of economics continued in the 20th century even though the economy changed towards an economy of services, not directly based on manufactured goods anymore. One of the basic principles of capitalism is still working; you can participate in effect stockpile labour—either by accumulating the products of labour or by accumulating something else (money) that you can exchange for labour. Music being musical works becomes something

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[4] (Hamilton, 2007)

you can stockpile or accumulate, a form of what has been termed 'aesthetic capital', but could also simply been called the (classic) repertoire.

The double ontological status of a musical work being both a physical event (the sounding music) and an impression of a phenomenon has blurred many discourses. Participants in the discussions giving value-laden characteristics to the music could refer to what they heard in the performance, or to their conceptualisation of the musical work the way they have conceptualised it. Stephen Davies has pointed out that even the most detailed score is (ontologically) thinner than the performance.[5] The "musical work" is a social construct embracing more properties than just the score. The musician will read the score as a collection of imperative symbols and thereby add more properties to the music.[6] The listener refers to his/her concept of the work. That would be a social construction where his/her musical knowledge and affinities combine the impressions of the actual music and its social setting. Using a language with words and concepts related to music theory and experiences can be meaningful to some participants of the discussion, but not to all. To bring some tidiness in this confusion, we need to look at the communicative chain.

THE COMMUNICATIVE CHAIN

A performer's goal is to communicate with the audience. The traditional communication model has three parts: Sender—Message—Receiver. It is easy to identify the musical expressions as the message and the listener as the receiver while the sender is more confusing, is it the composer or the performer? We need a more differentiated model.

Communication is bound to human activity. In the chain of elements in music communication, the composer, performer, and listener play the three central roles. We can add to this chain several non-human elements that certainly are fundamental for producing music, but still function as operationalised equipment bound to a historical context. Hence, the chain becomes Composer—notation—Performer—instrument—sound—Listener.[7] I elaborated the historical context of notation in Chapter 2. References to instruments and their part of this chain will be more random while the importance of the sound will be central in Chapters 10 and 14. The traditional way of thinking about musical communication is from the composer via the performer to the listener. This model has been paradigmatic in nearly all discourses in music history and music theory. The division between composer and performer that grew out of the notation practices in Ars Antiqua (1170-1310) made the literate dimension the most important (and for a long time also the only existing) object for the study of styles and genres in music history. Performers were reduced to mediators of the composer's written material, and nobody wrote about the listener. In developing a new model of the communicative chain it is important to focus on the three human elements composer, performer

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[5] (Davies, 2001)
[6] (Ingarden, Czerniawski, & Harrell, 1986)
[7] After Bengtsson (1977).

and listener, all having their ideas and knowledge of music. The double ontological status of music makes it necessary to include the most important non-human elements (objects) in musical life as well. In classical music, that would be the notation, the sound in a performance, and the discourse about the music. Then the model will be like this:
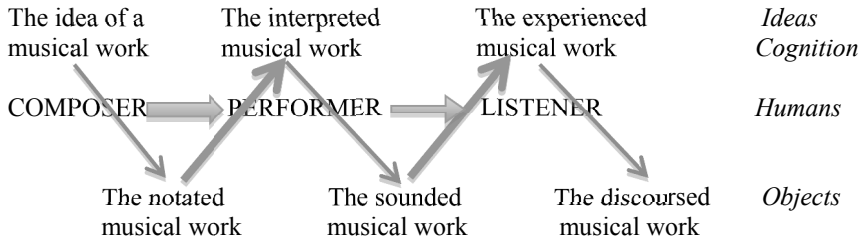
The idea of a musical work	The interpreted musical work	The experienced musical work	*Ideas*
			Cognition
COMPOSER	PERFORMER	LISTENER	*Humans*
The notated musical work	The sounded musical work	The discoursed musical work	*Objects*

Figure 5. The communicative chain

Based on this model it would be more relevant to link the distinction between thick and thin works to ideas and objects, making any transformation from idea to object a reduction from a thick to a thin entity. The notated musical work is the thin element, an element that needs to be interpreted, i.e. given (musical) meaning by adding properties that consequently open up potential meanings different from those intended by the composer. The performer's reading of the notation generates an interpretation based on the performer's horizon of knowledge (not restricted to music/sound/notation) and his performance skills. The sounded musical work is, therefore, thinner (has fewer properties) than the performer's concept of the interpreted musical work. In the same way, the listener's experience of a musical work is not restricted to the sounded musical work. The listener will interpret the performance by his/her expectations and horizon of knowledge (not restricted to music). In the same way, as the notated work is thinner than the idea and the sounded work thinner than the idea of interpretation, the utterances in a discourse of music will be thinner than the musical experience. It will not be possible to trace this model backwards: firstly, because of the lack of consistent linearity of the communicative (three different people with their way of structuring musical knowledge), but also because of the loss of information, regarding the objects compared to the ideas in every stage.

The traditional discourse in music analysis seems to skip the performer and jump directly from the listener's position to the score searching for the composer's intentions. Focusing on the score as the objective representation of the musical work, the analysis can reveal a great deal about the syntactical structure of the work, how it is composed, some characteristic elements of style, and why the composer has chosen that kind of notation. That sort of knowledge adaptable to the H-D method is of importance to the performer in developing an interpretation. However, in the extensive literature on composers' life and music, much analysis has gone one step further. Compiling literate information about the composer and

the social context during his life, that kind of information has been used semantically, giving meaning to the compositions' syntactical structure and thereby opening for reflections about the composer's intentions. There are some serious methodological problems in this practice. As the model of the communicative chain illustrates, moving from the object (composer's notated work) to the composer's idea of a musical work entails reversing the thinning process. From the objective facts, we need to proceed through cognitive processes in the composer's mind. Hence, the composer's horizon of understanding will make any logical inference invalid, and the analyst's understanding is incommensurable with the composer's horizon of understanding. (More on this in the chapter on Hermeneutics.)

Performance practice studies are often focused on the two first elements (composer and performer) using a lot of (new) knowledge about the transition of the composer's idea to the score/notation practice and how this knowledge should guide the interpretation. In a Historical Informed Performance project knowledge about the position of music in the society, the aesthetics of the music in that particular historical period and geographical area will supply relevant information on notation practice. Nevertheless, all this information can only provide a second-hand description of how the music should sound. Therefore, the performer needs to develop his/her interpretation in line with musical ideas on how the music should sound. That kind of knowledge/ideas (we could call it the practitioner's knowledge) has to be connected to the HIP knowledge to be reliable. At the same time, the musician must always to adjust his/her performance to the venue (acoustics and the audience) in order to create a valid performance. The challenge to the performer is to put the context knowledge and the product's expressions into the melting pot of his/her horizon of understanding, giving the product an identity and making it meaningful to the audience.

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7

SEMIOTICS

INTRODUCTION

Semiotics is the study of sign processes and meaningful communication. Whereas linguistics studies the structure and meaning of language more specifically, semiotics studies non-linguistic sign systems, including music. In music, we do have many sign systems. Music notation is, of course, a kind of linguistic sign system, but in a musical performance, many other sign processes are active. Musicians look at each other in performing music and even the gestures of a conductor (making no sound, usually) do create musical sounds. The feedback, which the performer receives from the instrument, is a constant sign process of great impact on the performance. To many musicians, responses in the audience and the acoustics in the room will moreover be of importance for creating meaningful communication. Several theories in semiotics touch upon aspects of music as a sign processes and communicative phenomenon.

In the introduction to Part II Methodology, I wrote, "Methodology refers to the rationale and the philosophical assumptions that underlie a particular study. The overall goal is to secure that the knowledge acquisition in the research will give us new possibilities. Within each methodology, several methods have been developed for how to conduct research on particular topics." In that perspective, semiotics is not a methodology as it is primarily a cluster of theories and not a method. Its goal is not to secure knowledge acquisition but to present an alternative approach to the understanding of music. However, our concept of music is more or less linked to our understanding of the signing process and to the question of how meaningful communication is possible through music performances. Theories in semiotics can contribute to a better understanding of music through their concepts in the study of the sign processes and the construction of meaningful communication. The firm connection between semiotics and linguistics makes possible a (literate) description of the development of meaningful communication in music. Music semiotics was born in the 1960s and '70s and has subsequently taken on many forms. Nevertheless, this discipline represents a different point of departure than traditional music theory. As such, theories in semiotics can help to purify the discourse on musical topics. In that perspective, we could argue that semiotics secure the knowledge acquisition of second order, i.e. on a meta-level.

Semiotics is often divided into three branches:

- Semantics: the relation between signs and the things to which they refer their signified denotations or meaning.
- Syntactic analysis: relations among or between signs in formal structures.

• Pragmatics: the relation between signs and sign-using agents or interpreters.

All three are relevant in exploring our understanding of music. In this chapter, I will present some core elements/opinions in semiotics and link them to a performer's perspective.

OGDEN'S TRIANGLE

I will start in the linguistic domain and move towards theories including non-linguistic signs and sign processes. The triangle of reference (also known as the triangle of meaning and the semiotic triangle) is a model how linguistic symbols are related to the objects they represent. The model has been nicknamed Ogden's triangle with reference to the book "The Meaning of Meaning" by Ogden and Richards published in 1922.[1] However, the many layers of philosophical issues in the triangle of linguistic symbols, its objects and the construction of meaning are as old as philosophy.[2] The original 1922-model looked like this:
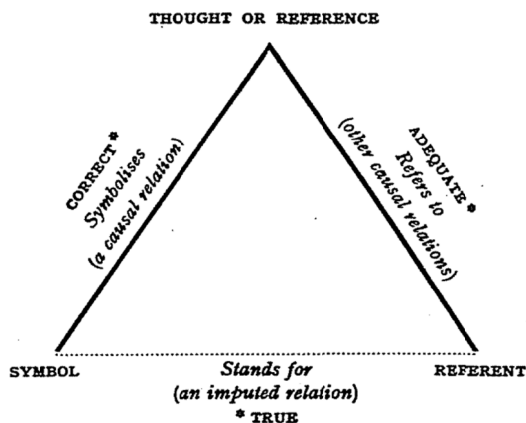
Figure 6. Ogden's triangle

Two other concepts are often combined with Ogden's triangle; denotation and connotation. The simplest explanation is that the denotation of a word/sign/symbol is its lexical definition based on a direct reference in the world (Symbol Stands for Referent). The connotation is the potential of creating symbolic meaning in the reader's mind in any word/sign/symbol. If we take the score as a collection of signs, the denotation of the signs would tell us which notes to perform, while we would also compare all the signs and develop an understanding of style and genre based on the connotation of signs.

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[1] (Ogden, 1974)
[2] Aristotle wrote extensively about this in his *De Interpretatione* (Second book of Organum).

In my presentation of Ogden's triangle, I have turned it around ninety degrees to facilitate a comparison with the other models in this part of the book. Using the verbs connecting the three elements makes possible linking the model to my illustration of a communication theory later on. I will use the tilted model and elaborate the consequences in the performer's perspective.
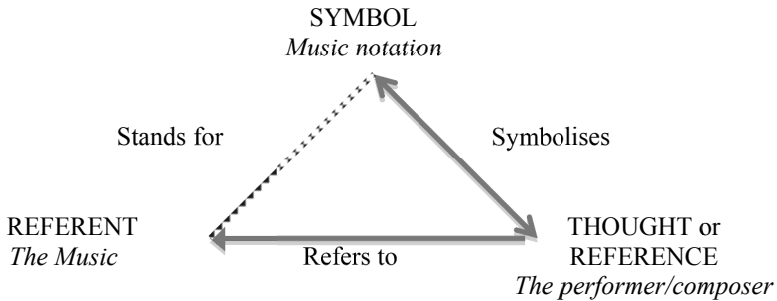
SYMBOL
Music notation

Stands for   Symbolises

REFERENT   THOUGHT or
The Music   Refers to   REFERENCE
                                              The performer/composer

Figure 7. Ogden's triangle in music

The essential element in this model is the arbitrary connection between symbol and referent. Comparing different languages this becomes rather easy to accept (in English we say dog, in German: Hund, and in French: chien). In music, it should be evident that the performance has a rather random connection to the music notation. However, our concept of a musical work makes strong alliances between the music notation (the score) and the music. The arrows between Symbol and Thought or Reference indicate that we (the humans) create symbols, and we interpret symbols. This double function underlines that to understand a symbol we have to create it in our mind. The symbol might be physically out there in the world around us, but only when we see it as a symbol does it become a symbol. Take the conductor of an orchestra as an example. To non-musicians his/her movements have only a slightly connection with the music performed compared to what the musicians in the orchestra can read out of the same movements/symbols.

In Ogden and Richards' model, they characterise the relations between Symbol and Thought/Reference as a causal relation search for correctness. The correctness in the relation between a musical idea and the performance of it is related to what I previously called the reliability of the performance. The relation between Referent and Thought/Reference is another causal one yet adequate. Analogues to the link between the Thought/Reference and the Referent are when the performance is valid/adequate. In Ogden and Richards' model, the last relation (Symbol stands for Referent) should be searching for truth. As truth is rather unattainable, we can use the triangle as an illustration from the performer's perspective. The angle between the arrows of 'refer to' and 'symbolises' could give us an impression of the uncertainty between Referent and Symbol. A wide angle indicates what Davies called a thin score (the performer has to make many decisions) while a small angle could refer to a thick score (close to electro-acoustical scores) where the

interpretation is much more regulated by the detailed explanation of the symbols in the score.

SAUSSURE

Ferdinand de Saussure (1857-1913) is the founder of modern linguistics, but he made significant contributions to the social sciences generally and to semiology and structuralism in the twentieth century. However, Saussure wrote nothing of general significance. Between 1907 and 1911, as Professor at the University of Geneva, he gave three courses of lectures on general linguistics. After his death in 1913, his students and colleagues decided that his teachings should not be lost and constructed the *Cours de linguistique générale,* which soon became so influential.[3] Saussure treated language as a sign-system with methods and concepts that semioticians apply to sign-systems other than language. One such basic semiotic concept is Saussure's distinction between the two inseparable components of a sign: the signifier (the sound-object), which in language is a set of speech sounds or marks on a page, and the signified (the concept), which is the concept or idea of the sign. Language is defined as 'a system of signs that express ideas,' both sign and ideas being understood as categories of relations. For Saussure, the signified and signifier were purely psychological, and they were form rather than substance. Today, the signifier is interpreted as the material form (something that can be seen, heard, touched, smelled or tasted) and the signified as the mental concept.

In music, this distinction can be illustrated as follows: A set of speech sounds is a set of separate tones available from a music instrument, and the marks on a page are equal to the notes in sheet music/a score. The signified is the concept or idea of the musical expression behind the signifier. (I write signifier and not sign here, as there are a lot of sign-systems other than the language in action during a performance of music.) Signifier and signified live in an irrevocable separation, essentially together yet always apart, which Saussure expressed in his *Cours* in this way:

> Language can … be compared with a sheet of paper: thought is the front and sound the back; one cannot cut the front without cutting the back at the same time; likewise in language, one can neither divide sound from thought nor thought from sound.[4]

Saussure also makes an important distinction between the linguistic system and its manifestations. *La langue* is the system of a language, the language as a system of forms, whereas *parole* is actual speech, the speech acts that are made possible by the language. In a musician's perspective, la langue would be the (general idea of) music or style while parole is the actual sounding performance. These two elements are separable, but the parole is not an option without la langue. As long as you work within a distinct style, this distinction is relevant. However, when the

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[3] (Saussure, 1916/1973)
[4] (Saussure, Bally, Sechehaye, & Riedlinger, 1966)

required musical expressions are outside the established concept of music, there is a move to an arena where music no longer is a language. Nevertheless, the expressions can still be musical but as sign-system different from language. To include that kind of musical expressions we need a semiotics unbound to linguistics.

PEIRCE

Charles Sanders Peirce (1839-1914) considered something was functioning as a sign in a semiosis when three things came into play: a sign, an object, and an interpretant. The sign is something interpretable as saying something about something. It is not necessarily symbolic, linguistic, or artificial—a cloud might be a sign of rain for instance. An object (or semiotic object) is a subject matter of a sign and an interpretant. It can be anything thinkable, a quality, an occurrence, a rule, etc., even fictional, such as Prince Hamlet. The object is the universe of discourse to which the partial or individual object belongs. The interpretant, then, is not a person who interprets, but any sign which explains another sign, whether that interpreting sign is a thought in somebody's mind, a written translation, a sentence spoken, or anything else that is interpretative. An interpretant (or interpretant sign) is a sign's meaning or ramification as formed into a kind of idea or effect, an interpretation, human or otherwise. According to Peirce, signification required not only a sign and its object (Saussure's signified and signifier), but also a further sign that mediated the sign-object relationship. Peirce defined this triadic process in this way:

> A sign, or *representamen*, is something that stands to somebody for something in some respect or capacity. It addresses somebody, that is, creates in the mind of that person an equal sign, or perhaps a more developed sign. That sign which it creates, I call the *interpretant* of the first sign. The sign stands for something, its *object*.[5]

Opening the concept of the sign to include anything that is interpretable, Peirce becomes important in the semiotics of music. Such an openness makes it difficult to define 'sign' (Peirce uses more the 70 definitions), so a theory will be more epistemological than ontological. However, in music the epistemological dimension (our musical experiences) are usually of more interest than the ontological elements (identifying the sounds and structures). In Peirce's theory, an object can be anything thinkable that incorporates musical ideas, and as such, the idea will be part of the universe of discourse (musical genre/style) to which the particular idea belongs. The interpretant will be the constructed meaning of a sign like an identification of a musical-rhetoric figure or associating unique expressive qualities in the sound of a particular instrument (or performer).

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[5] (Hartshorne, 1931-6, pp. Vol 2, §228)

Musicians often ascribe emotional qualities to a violinist's sound. Such meanings rely upon the interpretant of voice, the correlation of instrumental sound with expressive singing. By translating the violin's sound like a human voice, the interpretant makes sense of the relationship between timbre and emotion and forms an irreducible triad of sign, object and interpretant.[6]

Peirce's most influential classification of signs is about the manner in relation to the object. By capturing the importance of the human interpretation to signification, he makes the human mind the turning point in all relations to all phenomena in the world. Peirce presents another triadic differentiation of concepts. If the relation of a sign to its object is one of resemblance, the sign is an *icon*. A figurative painting or the imitation of the nightingale by an orchestral instrument are iconic. Images, diagrams, and metaphors all have a relation of resemblance to their objects. The idea of the iconic sign is naturally attractive to musicians. A sad aria might be meaningful because it resembles a cry of sadness, and a rapid musical passage can derive its meaning from a resemblance to quick physical movement. Sign and object cannot have all properties in common; this would imply a relation of identity rather than a sign function. In 18th century writings, the significance of music was considered due to the resemblance to verbal intonation and the human affections. Musical signs have also been thought of as images and metaphors, but very seldom as diagrams (similarity between musical forms and physical objects).[7] Peirce list all three as icons.

The second type of relation of a sign to its object, the *index*, is a sign that refers to the object that it denotes by virtue of being affected by that object. This sign is in dynamical connection both with the individual object, on the one hand, and with the senses or memory of the person for whom it serves as a sign. An index focuses one's attention and specifies more or less the location of an object or an event in space or time. A bullet hole in a glass pane is an index, signifying a past shot. A music aesthetics (popular in the Enlightenment) indicating that music is the expression of some real emotion represents music as an indexical sign. Usually, we do not form some conclusion about the condition of the musician merely from hearing the performance. The expressiveness of the music clearly does not depend on the fact of its being produced. However, in his *Versuch* C. Ph. E. Bach underlines the need for the performer to arouse in his body and mind the expressions/ affects he wants to communicate with the audience. This indexicality of music was considered to have its origin in the intonation of the voice. However, there are other possibilities for finding indexical functions in music. Tensions in harmonies and contrasts of tempo can all function as indexical connection between the actual music (the object) and the senses and memories of the person for whom

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[6] (Cumming, 2000, pp. 73-76)
[7] One example could be Geoffry Wharton: Ode de Cologne, (1985) where the score (turned 90 degrees) makes a diagram (an image) of the Kölner Dom (http://www.whartons.de/odedecologne.htm). However, such resemblance is firmly conventional within a particular culture (and can be taken as an example of Umberto Eco's critique of Peirce listing diagrams as iconic).

it serves as a sign, without linking the music as an expression to the expression of some real emotions.

The third class of sign is the *symbol*. A symbol consists in its being a rule that will determine its Interpretant. Symbols are not usually invented by an individual mind but are generated by culture. Their meanings change in response to social and historical processes. The symbol is connected with its object by the idea of the symbol-using mind, without which no such connection would exist. Given these characteristics of the symbol, we can see that the music notation system is a combination of symbols; to construct meaning in the notation each sign (note) must be connected to a rule that will determine its interpretant. These rules are generated by culture and changes in response to social and historical processes. To read music notation in this way, you have to reach the level of competence in Dreyfus' skill acquisition model. At lower levels, music reading will be more indexical and sometimes iconic.[8] In developing an interpretation of a musical work, the amount of signs applicable to the music is not restricted to the symbols in the score. We cannot prevent our symbol-using minds from making associations and composing hierarchical structures of all impressions active in a performance situation.

Sign functions in music are always mixed. Symbols appear in music, but their logically defined qualities never appear in the true condition. The 'sighing' appoggiatura was originally an icon of a real sigh. As early as *Dido's lament* (Purcell 1689) this icon had become a conventional symbol of grief, and it was freely used for centuries with this meaning, even in instrumental music. Symbols often have their origin in icons; however, when the iconic associations have been forgotten, symbols can become part of the 'language'/a symbol. In addition, to the symbol-using mind indexical sign impressions might become symbols in the meaning construction of reality.

CHOMSKY'S GENERATIVE GRAMMAR

Another linguistic tradition, the transformational-generative grammar of Noam Chomsky (1928-) has proved to be relevant to music in several ways. In his Norton Lectures at Harvard Leonard Bernstein made the widest known musical connection in 1973.[9] He saw relations between the transformations that generate sentences and can turn one sentence into another and the changes that musicians imposes on a thematic material. Besides, he linked the way in which linguistic deletion can produce ambiguity to omission as an important process in music. Moreover, he suggested that poetic language, especially the device of metaphor, was a kind of super-surface structure in which transformational laws are used to lend ambiguity and transparency to ordinary language, just as musical devices are employed to generate a highly ambiguous surface structure in music.

Chomsky's vision of 'transformation,' the invocation of a 'deep structure,' the division of linguistic activity into competence and performance, and the envisaging

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[8] In modern graphical notation, iconic and indexical approaches must be used.
[9] (Bernstein, 1976)

of a universal grammar based on the innate structure of the mind all have notions that seem of interest among musicians. Chomsky challenged structural linguistics (Saussure's successors) and introduced transformational grammar. This approach takes utterances (sequences of words) to have a syntax characterised by a formal grammar; in particular, a context-free grammar extended with transformational rules. In Chomsky, the emphasis shifts from phonemics, the study of the smallest elements of language, to syntax, the principles of sentence structure. His theory posits that grammar consists of both "deep structures" and "surface structures." The surface structure "faces out" and is represented by spoken utterances, while deep structure "faces inward" and expresses the fundamental relations between words and conceptual meaning. The generative grammar dictates that the syntax, or word order, of surface structures, adheres to certain principles and parameters, while transformational grammar consists of a limited series of rules, expressed in mathematical notation, which transform deep structures into well-formed surface structures. The transformational grammar thus relates meaning and sound.[10] In such a perspective, Chomsky's discourse is transferable to music. In the same way, as generative grammar dictates the syntax, compositional grammar will dictate the shaping of a musical motif. The transformational grammar will transform the musical material into well-shaped musical forms.

The division between competence and performance in linguistic activity resembles characteristics often used in music. Competence is the ideal language system that enables speakers to produce and understand an infinite number of sentences in their language and to distinguish grammatical sentences from ungrammatical sentences. This is unaffected by "grammatically irrelevant conditions" such as speech errors. The exercise of competence in the actual formulation of utterances Chomsky called performance. A simplified and universal version of music would be like this. It is possible to have a high degree of musical competence (both literate and as musical experiences) without being able to perform musically. The performance knowledge is creating the surface structure based on the competence (knowledge of deep structures). One's competence is defined by the grammar or set of language rules. It is represented mentally and manifested in the understanding of acceptable usage in a given linguistic idiom. Therefore, grammatical competence defines an innate knowledge of rules rather than knowledge of items or relations. According to Chomsky, it is regarded to be innate because one does not have to be trained to develop it and will yet be able to apply it to an infinite number of unheard examples. However, in music, it seems as if the grammatical competence is usually developed as knowledge of rules and relations, and not as an innate knowledge. Chomsky's discourse is may be relevant in characterising the uniquely talented musicians that seem to have acquired the grammatical competence before their musical training started.

The universality of music has been claimed among musicians and listeners at all time. The basis of Chomsky's linguistic theory is rooted in biolinguistics, holding

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[10] (Chomsky, 2002; Chomsky & Massachusetts Inst of Tech Cambridge Research Lab Of, 1964)

that the principles underlying the structure of language are biologically determined in the human mind and hence genetically transmitted. He, therefore, argues that all humans share the same underlying linguistic structure, irrespective of sociocultural differences. Combined with an understanding of music as a kind of language, argumentation goes that music could have some deep structures making possible a universal communication in music. The big problem is twofold. Music has some similarities with language, but what differs is of importance to the essence of music. Secondly, ethnomusicological studies indicate that the linguistic elements in music are dependent on a cultural context, making communication in music across different music cultures a tough process. The construction of meaning in musical performances is distinct from the processes of meaning in language. Since the 1990s, much of Chomsky's research has focused on what he calls the "minimalist program," which attempted to demonstrate that the brain's language faculties are the minimum faculties that could be expected, given certain external conditions that are imposed on us independently. Chomsky began to place less emphasis on something such as a universal grammar embedded in the human brain, and more emphasis on a large number of plastic cerebral circuits. This plasticity would entail an infinite number of concepts. The brain would then proceed to associate sounds and concepts, and the rules of grammar that we observe would, in fact, be only the consequences, or side effects, of the way that language works. In that perspective, it becomes more relevant to accept music as a universal human activity and at the same time see musical performances as a result of genetic, social and cultural impressions in the musician's mind, where the cognitive processes are standard and not exclusively related to music (or language).

LERDAHL AND JACKENDOFF

Musician Fred Lerdahl (1943-) and linguist Ray Jackendoff (1945-) have presented the most extensive application of the generative theory of tonal music.[11] Their object was to write a transformational/generative grammar of classical Western tonal music contributing to psychology and cognitive theory. They take the basic procedures of musical and linguistic comprehension to be features of mind, and thus to be dependent both on learned and genetic constraints. Just as Chomsky reached a concept of universal grammar through the study of English, they feel that their most fundamental insights concern universal human musicality. Their system is based on the intuitions of a listener (variously qualified as naïve, experienced, or ideal) and thus describes the process of musical perception rather than composition. The analysis of musical hearing thus proceeds by reduction, which is a step-by-step simplification of the piece, where at each step less important events are omitted, leaving the structurally more important events as a sort of skeleton of the piece. In this way, their book *A Generative Theory of Tonal Music* (GTTM) represents an interesting alternative to the traditional and literate

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[11] (Lerdahl & Jackendoff, 1983)

theories of music. The theory expounds the most novel and controversial part in the area of reduction. The influence from Schenkerian 'foreground,' 'middleground' and 'background' is evident.[12] However, where Schenker is content with intuitions, Lerdahl and Jackendoff try to proceed from intuition to a systematic rigour linked to Chomsky through the criterion of grammaticality.

Lerdahl and Jackendoff's theoretical formulations in GTTM extend to the elements of musical structure that are continuous, and that can be regarded as hierarchically perceived in a strict sense.[13] Under the conditions of such hierarchic systems, only temporally adjacent elements on one level can be grouped to constitute an element on the next highest level. This approach eliminates the motivic and thematic aspects of a musical work from direct consideration regarding the theory. Nevertheless, motivic and thematic parallelism is invoked as a perceptual 'input' to the theory. Lerdahl & Jackendoff establish four mutually influential aspects of structure, which embody this type of hierarchical organisation: grouping and metre, both of which involve a temporal segmentation of the musical surface; and time-span reduction and prolongational reduction, embodying intuitions concerning harmonic and tonal weight. Grouping reflects the perception of the musical surface as being composed of smaller, discrete elements on many levels: motive, theme, phrase, theme-group, section. The consideration of metre establishes the way in which regularity of pulse operates on different levels, interacting with the rhythmic forms of the musical surface. Time-span reduction accommodates the notion that each (small-scale) metrical and (large-scale) grouping segment of a piece is dominated by a particular event while prolongational reduction establishes the tonal hierarchy expressing intuitions about large-scale harmonic relationships working across the boundaries of time-spans. In each of these four domains, Lerdahl and Jackendoff propose two distinct types of rule: The well-formedness rule (WFR), which necessarily limits the possible structures within a domain to those which embody the strict hierarchical principles of recursiveness, containment, etc.. Secondly, the preference rule (PR), which, acting on the musical data, assigns a particular structural description to a surface. In the Preface to the 1996 Reprint, they write:

> … any grammar we could write generated too many "grammatical" structures that did not make musical sense. We found that we needed instead a grammar that generated a large number of alternative structures and then selected from among them the ones that were "most stable." This process of selection involved the use of "preference rules," violable principles that interacted according to relative weight.

The GTTM made a huge impact on music analysis and theory by making the musically meaningful the guide for developing the theory. The limitation to tonal music reduces the possibilities of a universal grammar. In many ways, the book reinforces the notion of tonal music as the (only) meaningful music. Another

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[12] (Cook, 2007)
[13] The following summary of GTTM is based on Harvey (1985).

constraint is the treatment of timbre and dynamics as critical dimensions of musical structures. The authors do recognise their crucial contribution to the principles that establish the hierarchical structure of a piece but do not formalise these principles.[14]

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[14] (Monelle, 1992)

IS MUSIC A LANGUAGE?

INTRODUCTION

Language is the most important sign system produced by humans. "We perceive the world through language, that is, through having language," says Donald Davidson.[1] Nevertheless, the connection between a linguistic sign and its referent is arbitrary (Ogden's triangle). Our ability to make symbols and interpret signs in a combination of intersubjective and subjective knowledge makes it difficult to identify the smallest unit in a sign system like music. In a language, we usually call the 'phoneme' the smallest distinctive unit operating within the network of structural relationships that constitutes its sound-system. In itself, the phoneme has no meaning, but it determines meaning. (The difference between kill and kiss, /l/ versus /s/). The smallest unit to be meaningful in itself, which is the smallest unit of grammatical analysis, is the 'morpheme'. Some writers have employed the word 'museme' to mean a musical morpheme.[2] However, it has proved very difficult to define a concept of musical applicability.

In the previous chapter, semiotics was divided into three branches; Semantics (sign to meaning), Syntactic (relation among signs) and Pragmatics (sign to users). All three must be present to identify a language. Music as a sign to users exists in all relations within the communicative chain in music: The composer's representable notation of his musical idea/work. The performer's signification of the notation in interpretation and performance. The listener is coping with the sound impressions as signs of a musical message. Within a musical genre and style, we can also express (in language) relations among or between signs in formal structures. Textbooks in Music History, Analysis and Composition are full of such sign-relations. So far, music and language seem to be comparable. The difficulties become much more serious at the level of semantics. In what way can we say (e.g. use language to express) that music has meaning? Moreover, how would that possibility affect the notion of music being a language? The most common characterizations of music as language are that music is an "international language" and that music is "the language of emotions". If we find it impossible to accept any of these two solutions, we still should search for a possibility to say that music is meaningful.

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[1] (Davidson, 2005, p. 141)
[2] (Tagg, 1979)

MUSIC AS AN INTERNATIONAL LANGUAGE

When Haydn decided to go to England in 1790, his friends warned him that he had no education for the wide world, and he spoke so few languages. Haydn is supposed to have answered: "But my language is understood all over the world." Commenting on this quote, Peter Kivy asks, "What is it about this famous statement that sounds so true? And what is it that is so palpably false?"[3] He concludes that Haydn was right in claiming that his music was understood all over the world, but that was a very small and homogeneous world, which shared *his* musical culture. Lacking a vocabulary, music has no semantic content and, therefore, we cannot understand music in the same way we understand German, French or English. Kivy underlines that to understand music is to enjoy and appreciate it for the right relevant reasons. Nevertheless, he brings the argument a step further "… to understand music is … to enjoy and appreciate in it those aspects of it that the composer intended you to enjoy and appreciate, and to enjoy and appreciate them in the way or ways intended."[4] Here I disagree with Kivy. I think it is possible to enjoy and appreciate a piece of music without knowing the composer, his intentions or musical culture. The listener's position and culture may create a sufficient background to the understanding of the musical impressions as enjoyable and appreciated. It is possible to enjoy and appreciate a new piece of music even if you do not know the composer or any of the intentions linked to the musical work. In line with the concepts reliability and validity, I would say that Kivy's argument is too restricted to the reliability of a performance as the listener's argument and my counterargument taken to the extreme could be too much focus on the validity dimension. The golden mean is supposed to secure a sustainable meaning or, at least, an acceptable understanding.

Kivy makes a clear distinction between understanding and meaning. "you don't have to know what the themes (or whatever analogue to words you choose) of a classical symphony mean to understand *it*. They don't *mean* anything. One way of putting this is to say that, unlike natural languages, the music of the kind Haydn wrote has a "syntax" without semantics. … musical "syntax" may not be syntax in the literate sense, but syntax-like, as music is language-like, but not language."[5] For Kivy, the total lack of semantic component is suffadvertised to conclude that music is not a language. I am not so sure that it is possible to have an understanding of the themes in a classical symphony without assigning any meaning to them. This meaning would not be restricted to literate concepts: Taking Peirce's classification of the relation between sign and object as a point of departure, it is possible to say the music has meaning and is understandable with reference to the human interpretation process. We can create illiterate meanings, but these meanings have the same restrictions as Kivy pointed out for Haydn's utterance; such meanings are communicable only within a very restricted and homogenous world sharing enough

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[3] (Kivy, 2007, p. 215)
[4] (Kivy, 2007, p. 217)
[5] (Kivy, 2007, p. 216)

common references to agree on the utterance (verbalised meaning) of the music/musical theme.

The Enlightenment's conception of music as a language reflects the broader practice of hearing music within the framework of rhetoric. The parallels between music and language were pointed out in countless treatises borrowing terms from grammar to explain technical elements in a musical form. The new paradigm of listening that emerged out of the aesthetics of idealism around 1800 abandoned the premise that music was a language. The act of aesthetic perception became a philosophical activity. The view of art as a vehicle of truth changed the very foundation of both philosophy and art, giving rise to a poetic style of discourse very different from the systematic, deductive method cultivated in the Enlightenment. In the wake of this poetic discourse instrumental music were often given nicknames; not as a literate meaning of the music, but as an indexical element in the sphere of meanings attached to the understanding of a musical work. Cultivating the genres of the fragment and aphorism, the moment of insight could provide a window on the Absolute. The new poetic philosophy was no longer the discursive treatise based on reductive logic, but the work of art.

A less logical analysis than Kivy's is more common. In music, chords are more or less what verbs, substantives and adjectives are in a language while individual notes are comparable to syllables.[6] A syllable refers to letters that are taken together to make a single sound. It is tempting to compare this to individual notes, but there is one serious problem. The alphabet has a restricted number of letters in exclusive distribution. In music, the notes are infinite in a continuum of sounds. If we accept that 'syllables' is short for the phonemes and morphemes, we have a possible link to the smallest unit meaningful in itself, which is the smallest unit of grammatical analysis. However, in this comparison, there is no way of finding meaning or understanding in the music as an international language. Making chords and harmony the syntax of music fails to help establish either meaning or understanding of the musical expressions. It might say something about how a composer (like Bartok) uses the harmonic potential in different kinds of chords, but that is not the music.

THE LANGUAGE OF THE EMOTIONS

Attitudes toward instrumental music changed markedly around 1800. Its power to move passions had long been acknowledged, but without words, music's perceived ability to convey ideas had always remained suspect. In his *Critique of Judgement*, Kant declared instrumental music to be "more pleasurable than culture."[7] Like wallpaper, instrumental music was an abstract art that gave pleasure through its form but lacked content and therefore was inferior to vocal music. The French philosopher Bernard de Fontenelle (1657-1757) utterance "Sonata, what do you want of me?" was to be quoted by countless writers as a shorthand dismissal of the

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[6] Moreux (1952) outlining some elements of Bartok style uses this analogy.
[7] (Kant & Weischedel, 1790/1974)

art of instrumental music on the grounds of vagueness and imprecision. Whereas Enlightenment rationalists had dismissed instrumental music for its inability to incorporate and convey ideas, their Romantic successors embraced music without words precisely because of its ability to function outside the structures of language. The principal source for this new aesthetic was idealism. The true essence of an artwork could be grasped only by the power of imagination—*Einbildungskraft*—a faculty in the mind capable of mediating between the senses and reason, between the phenomenal and the nominal/literate world. The late 18th-century aesthetics moved from the premise of passive effect to active construction. Combined with the aesthetics of mimesis, a doctrine that had prevailed in all the arts before 1800, the critics argued that by imitating the nature or human passions, a work of art could induce a corresponding emotional reaction in the mind of the listener. Many 18th century writers sought to explain the emotional power of instrumental music by regarding it as "the language of the heart" or "the language of emotions."

Deryck Cooke's book *The Language of Music* has appealed to many readers as a revelation of expressive meaning in music.[8] The book is an attempt to show that "the conception of music as a language capable of expressing certain very definite things is not a romantic aberration, but has been the common unconscious assumption of composers for the past five-and-a-half centuries at least."[9] There are several problems in realising such a goal. Firstly, he relates 'music' only to composers. The idea that music can express "certain very definite things" is not so common, even as an unconscious assumption, as Cooke says. It is possible for members of an ensemble to perform a piece of music without everyone having the same definite expression in his or her playing.[10] The 'things' must be emotions since he claims that "music is the expression of emotion".[11] In Cooke's 'terms of vocabulary,' he is chiefly concerned with the description of connotations rather than denotations and the system of signifying, and as such his book is a lexicon of musical significations. If music is based on natural correspondence between sounds and meanings, then it is an indexical sign, rather than a language.

A pragmatic approach would be to search for elements of meaning construction independent of and in addition to the impression of the music performance. Such a survey cannot be taken as decisively proof in the music/language discussion, but it will illustrate the complexity of this problem. However that may be, music being a communicative phenomenon makes pragmatic approaches relevant in differentiating our concepts and understanding of the music-language relation.

Aniruddh D. Patel presents a review of 11 types of musical meaning starting with the "intramusical" meaning before gradually relating to things outside the music ("extramusical").[12] The purest form of intramusical meaning exists when

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[8] (Cooke, 1959)
[9] (Cooke, 1959, p. xi)
[10] However, playing the *Verklärte Nacht*, it usually enhances the expressivity in the playing if all knew the Richard Dehmel poem Schönberg used as a point of departure for composing the music.
[11] (Cooke, 1959, p. ix)
[12] (Patel, 2008, pp. 305-351)

musical elements bring other musical elements to mind; the musical expectation. Leonard B. Meyer called this "embodied" meaning "which exists when a stimulus indicates or implies events or consequences that are of the same kind as the stimulus itself."[13] Our ability to classify and organise musical impressions as variations, repetitions or contrasts results in examples of intramusical meaning. Meyer contrasted this with "designative" meaning, as when a word points to an object, which itself is not a word.[14] Another topic is whether the expression of emotions is in the music or the listener. Experiments show broad agreement among listeners in judging expressive qualities in music.[15] However, these results are heavily culture-bound; affective musical categories are not uniform across cultures.

Some of the oldest written observations about music concern its power over the body generating emotions. Nevertheless, the scientific study of this phenomenon is relatively young; however, it has new tools in the development of modern cognitive neuroscience. The experience of emotion when listening to music can be observed in all music cultures. How distinct from everyday emotions such experiences are, and how connected to physiological responses (like 'chills'/'shivers down the spine'), is still much debated. Another remarkable property of music is its ability to evoke a sense of motion in a listener. Eric Clarke points out "it is inevitable that musical sounds will also specify movements and gestures, both real movements and gestures of their actual physical production … and also fictional movements and gestures of the virtual environment."[16] He suggests that music can evoke two kinds of motion: a sense of self-motion and a sense of external objects moving in relation to the self or to one another.

Moving to tone painting and musical topics, we leave the intramusical and lean towards the extramusical. Tone painting can include environmental sounds, animal sounds, or human sounds, all imitating natural phenomena. Musical topics refer to a thesaurus of characteristic figures developed in the early eighteenth century, which formed a rich legacy for classic composers. The term is meant to capture the idea that these figures were subjects of musical discourse. Deryck Cook's 'terms of vocabulary' can be seen as expanding this idea of topics to all tonal music. Wagner's concept of leitmotif belongs to the same idea of musical topics.

Sociolinguists have demonstrated that the speaker's accent can influence a listener's beliefs about a speaker's educational background, ethnic identity and so forth. Thus, a tendency to link sound with social associations appears to be shared by language and music. Instrumental music can evoke mental imaginary of non-musical phenomena and narrative thoughts as well as associations to significant life experiences. In line with this, sociologists and ethnomusicologists have drawn attention to the use of music to construct (versus express) self-identity. As his last point, Patel looks to the relationship between musical structures and extramusical cultural concepts and ideas. Then we are back in German idealism making music

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[13] (Meyer, 1956, p. 35)
[14] Today the term "embodied" is used in different meanings in several disciplines.
[15] See Gabrielsson (2001) for a thorough review.
[16] (Clarke, 2001, p. 222)

an arena of thinking and reflecting on philosophical issues of importance to the human nature.

David Huron has another point of departure for his analysis of musical emotions. Based on his experimental efforts to understand how music evokes emotions he developed a psychological theory of musical expectation in his book *Sweet Anticipation*.[17] Huron proposes that emotions evoked by expectation involve five functionally distinct response systems: reaction responses (which engage defensive reflexes); tension responses (where uncertainty leads to stress); prediction responses (which reward accurate prediction); imagination responses (which facilitate postponed gratification); and appraisal responses (which occur after conscious thought is engaged). For real-world events, these five response systems typically produce a complex mixture of feelings. The book identifies some of the aesthetic possibilities afforded by expectation and shows how common musical devices (such as syncopation, cadence, meter, tonality, and climax) exploit the psychological opportunities. The theory also provides new insights into the physiological psychology of awe, laughter, and spine-tingling chills. Huron traces the psychology of expectations from the patterns of the physical/cultural world through imperfectly learned heuristics used to predict that world to the phenomenal qualia we experienced as we apprehend the world. As such, his theory does not focus on the music/language-dilemma but goes straight to a discourse of musical expectation. Metaphorically, we could say that he moves the discussion of music as language from the mouth to the mind, not studying what we say about our emotions but how emotions evoke in our mind listening to music.

Kofi Agawu lists Ten Propositions about Language and Music in his book *Music as Discourse*.[18] His purpose is to clarify what language and music have in common and what is different in such a degree that it would be wrong to say that music is a language. I will group his propositions in three categories, similarities, a difference of degree, and disparity/incongruence. The similarities between music and language are first that both are known in all human societies. Secondly, language (in its manifestation as speech) and music is organised into temporally bounded or acoustically closed texts. Whether they be oral or written texts, verbal texts share with musical texts a comparable internal mode of existence. Thirdly, a musical composition, like an oral composition, is organised into discrete units or segments. Music is, in this sense, segmental. Understanding a temporal phenomenon is only possible if the whole (imagined or conceptualised) is grasped regarding its constituent parts, units or segments.

In four cases, Agawu put the propositions in the borderland of differences in degree between music and language.[19] Unlike language, which is both a medium of communication and a vehicle for artistic expression, musical language/expression exists primarily in the poetic realm, although it can be used for 'purely'

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[17] (Huron, 2006)

[18] V. K. Agawu (2009, pp. 20-29) in K. Agawu (1999, pp. 141-146); his list contains 11 elements.

[19] Concerning the four levels of measurement presented in Chapter 5 Agawu's comparison is at the ordinal level, not reaching the interval level in the lack of a zero value.

communicative purposes. Despite the sporadic evidence that music functions as a traditional medium of communication music's ordinary language is thus available only as a speculative projection. Secondly, although segmental, the musical composition is more continuous in its real-time unfolding than an oral composition. Thirdly, music and linguistic meaning (or reference) may be extrinsic or intrinsic. In music, intrinsic meaning predominates over extrinsic, whereas in language it is the other way around. Intrinsic meaning depends on an awareness of convention, but because we often take for granted our awareness of conventions, we tend to think of intrinsic meanings as internally directed and of immediate significance. And lastly, unlike language music exists only in performance (actual, idealised, imagined, remembered). The system of language and the system of music exist in a synchronous state, harbouring potential relationships to be released in actual verbal or musical compositions. However, Agawu admits that the difference in performability between music and language is finally relative, not absolute.

The three propositions where Agawu finds music and language incongruent are the following. Whereas language interprets itself, music cannot do so. Language is the interpreting system of music. If musical units have no fixed meaning, if the semantic element in music is merely sporadic, if it is not possible to make a propositional statement in music, and if the music is ultimately untranslatable, then music cannot interpret itself. Secondly, while words have a more or less fixed lexical meaning, music's units—whatever they are—do not. While one could argue that understanding language is also crucially dependent on context and convention, the relative morphological stability of words and associated word meanings marks a crucial difference from a more precarious morphology (the study of shapes) of musical vocabulary.[20]

Finally, and what I find most important of all his propositions: Music exists in two interdependent planes, the plane of succession ("melody") and the plane of simultaneity ("harmony"). Language lacks the plane of simultaneity. The plane of simultaneity is one of the factors that makes music untranslatable. I find linking simultaneity to harmony slightly confusing as 'harmony' is often connected to textbook's 'harmony and counterpoint,' which would be discoursed focusing the plane of succession. Substituting 'harmony' with 'sonority' would be a better term for the immediate impression of a musical sound. Then the two planes correspond to vertical and horizontal vectors in the soundscape. It is important, then, to underline that even though we write harmony (chords) vertically in classic music notation, our notation system has no single parameter for identifying the sonority of the present musical moment. It is the sonority/plane of simultaneity that creates the frame or platform where meaning construction develops.[21] The first impression

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[20] Taking this proposition among those showing the disparity of music and language, Agawu dismisses D. Cooke's vocabulary of terms as evidence of music being a language.

[21] I have often put together a musical quiz to my students taking only the open chord from orchestral pieces (like Eroica, Symphony of Psalms, Bach Orchestersuite no.1, Grieg's Piano Concerto, etc.) and asked my students to listen to this one second of music and decide when (75 year tolerance) the music was composed. They usually are surprised how real the plane of simultaneity is.

is crucial in establishing the musical expectations that govern the rest of our listening. We can identify a performer by recognising his/her distinctive sonority long before we can identify which piece of music they play.

Agawu emphasises the plane of simultaneity's importance to our music appreciation and understanding in a way that can be linked to what Husserl calls the fundamental form in phenomenology "eine orginär gebende Anschauung" (an original given intuition). In that perspective deductions and constructions of meaning belong to the plane of succession, while Anschauung is at the plane of simultaneity. Much of the scholarly output related to classical music seems to focus on theories and methods applicable to constructions and deductions skipping the originally given intuition. The plane of succession has some similarities to the sequence of elements in the language, but it is at the plane of simultaneity that the totality of a musical experience is generated.

The constitution of the brain and the working of the mind have been of interest for ages. In the 19th century, phrenology was a branch of pseudomedicine primarily focused on measurements of the human skull, based on the concept that the brain is the organ of the mind and that certain brain areas have specific functions or modules. Music and language were separated in two different faculties/areas, and the size of the faculty could indicate how talented you were.[22] Phrenology had a great impact on how we still judge people based on their faces (we easily identify the villain in an old movie), giving our prejudices a touch of scientific opinion. However, today modern technology has made it possible to "see" the brain and how it works using neuroimaging. Several technics are available, but in studying the mindfulness of music, fMRI is often used.[23] There seems to be a general agreement that the brain is organised in such a way that particular tasks are located in special areas. In particular, information from brain-damaged people supports such a view. Amusia and aphasia studies have led to strong claims about the independence of music and language in the brain. Nevertheless, neuroimaging evidence from healthy individuals processing syntactic relations in music and language makes possible what Patel (2008) calls the "shared syntactic integration hypothesis" (SSIRH). It says that the two domains (music and language) have distinct and domain-specific syntactic representations (e.g. chords vs. words), but that they share neural resources for activating and integrating these representations during syntactic processing. Studies of brain activity during experiments where "wrong" chords/words appear in a normal sequence of words/harmonic progression, explore this possible link between music and language is explored.

It is impossible to give a straight answer to the question "Is music a language?" Too many considerations and premises make any answer rather partial. Alternatively, maybe the question "is music a language?" is a category mistake (à la "is this stone dead?"). What I hope can come out of the previous discussion is

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[22] They measured Robert Schumann's head especially because of his combination of talent in music and language and his mental sickness.
[23] fMRI acronym for Functional magnetic resonance imaging.

that if we still want to find a way of making music meaningful, we have to proceed towards the human mind. We can study many aspects in music as objective entities using hypothetico-deductive methods, and we can study music as sign-systems based on theories in semiotics. However, to grasp the phenomena of meaning in music we have to accept human ability to generate symbols, meanings and ideas, and how our mind combines impressions and reflections in our interpretation and creation of the world.

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HERMENEUTICS

A SHORT RIDE IN THE HISTORY OF HERMENEUTICS

After presenting these theories on the relation between music and language, we would still like to think that music in some way is pregnant with meaning. Music does not just reflect verbal meaning, and as the semioticians would say: verbal meaning cannot just be reflected in the music. Words transform latent meaning into actual meaning. They form the link between the work and the world. This link, and not restricted to verbal utterances, is the arena of hermeneutics. All kinds of relations between a work and our adaption of the work into our world are part of processes that have been studied as part of hermeneutics.

The term 'hermeneutics' covers the theory of understanding and interpretation of linguistic and non-linguistic expressions. As a theory of interpretation, the hermeneutic tradition stretches all the way back to ancient Greek philosophy. In *De Interpretatione*, Aristotle offers a hypothesis that lays the groundwork for many later theories of interpretation and semiotics:

> Words spoken are symbols or signs (symbola) of affections or impressions (pathemata) of the soul (psyche); written words are the signs of words spoken.
> As writing, so also is speech not the same for all races of men. But the mental affections themselves, of which these words are primarily signs (semeia), are the same for the whole of mankind, as are also the objects (pragmata) of which those affections are representations or likenesses, images, copies (homoiomata).
> (*De Interpretatione, 1.16a4*)

In the course of the Middle Ages and the Renaissance, hermeneutics emerges as a crucial branch of Biblical studies, nearly synonymous with exegesis. Later on, with the German romanticism and idealism the status of hermeneutics changes to explore the conditions of possibilities for symbolic communication as such. Friedrich Schleiermacher (1768-1834) studied the nature of understanding in relation not just to the problem of deciphering sacred texts but to all human texts and modes of communication. He distinguished between grammatical interpretation and psychological interpretation. The former studies how a work is composed of general ideas; the latter studies the peculiar combinations that characterise the work as a whole. During Schleiermacher's time, a fundamental shift occurred from understanding not merely the exact words and their objective meaning to an understanding of the writer's distinctive character and point of view. Wilhelm Dilthey (1833-1911) broadened hermeneutics even more by relating interpretation to historical objectification. Understanding moves from the outer manifestations of human action and productivity to the exploration of their inner

meaning. In his *Einleitung in die Geisteswissenschaften* (1883), he points to a fundamental difference between natural sciences and humanistic sciences. The natural sciences explain by showing how the isolated incident is part of a general law while the humanistic sciences interpret their each action/object as manifestations of human consciousness. In his last important essay, "The Understanding of Other Persons and Their Manifestations of Life" (1910), Dilthey made clear that this move from outer to inner, from expression to what is expressed, is not based on empathy. Empathy involves a direct identification with the Other. Interpretation involves an indirect or mediated understanding that can only be attained by placing human expressions in their historical context. Thus, understanding is not a process of reconstructing the state of mind of the author, but one of articulating what is expressed in his work.

A new turn, this time ontological, was triggered by Martin Heidegger (1889-1976) publishing *Sein und Zeit* in 1927. Now hermeneutics is not only about symbolic communication but raises the most fundamental question of human life and existence as such. After the publication of *Being and Time,* Heidegger stops engaging with explicit hermeneutic issues (as well as the terminology of understanding, interpretation, and the hermeneutic circle). His student, Hans-Georg Gadamer (1900-2002), however, takes up this aspect of his thinking.[1] He argues that we never know a historical work as it initially appeared to its contemporaries. We have no access to its original context of production or the intentions of its author. This is quite the opposite of Dilthey and worth noting in the discussion around authenticity and historically informed performances. As a part of the tradition in which we stand, historical texts have an authority that precedes our own. This authority is kept alive only to the extent that the present recognises it. We acknowledge the authority of a text (or a work of art) by engaging with it in textual explication and interpretation, by entering into a dialogical relationship with the past. Gadamer refers to this movement of understanding as the fusion of horizons. A premise to entering the work is to be open and non-critical; otherwise, it will be difficult to reach the full potential of meaning in the work. The traditional Master Class situation in music performance studies has many similarities to Gadamer's idea of Bildung/education in culture.

Jürgen Habermas (1929-) draws attention to what he takes to be the political naiveté of Gadamer's hermeneutics. In Habermas's view, Gadamer places too much emphasis on the authority of tradition, leaving no room for critical judgment and reflection. Reason is denied the power of a critical, distanced judgment. What is needed is therefore not just an analysis of the way in which we de facto are conditioned by history but a set of quasi-transcendental principles of validity regarding which the claims of the tradition may be subjected to evaluation. Then we might discover elements in the text/work of art that be constituent to the

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[1] Gadamer wants to combine the Heideggerian notion of the world-disclosive synthesis of understanding with the idea of *Bildung*, of education in culture. This, on the whole, is the project of *Wahrheit und Methode* (Gadamer, 1960), a work that Gadamer spent more than 30 years completing.

meaning and not necessarily consciously considered by the author. Hermeneutics, Habermas argues, must be completed by a critical theory of society.[2]

<div align="center">EXPLANATION AND UNDERSTANDING</div>

We learned from the introduction to the hypothetico-deductive method that all observations are theory laden. Moreover, the semioticians told us that we perceived the world through our language. How can we proceed in searching for meaning in music, or, at least, show the value of our music as a human activity worth doing? Well, firstly, we should keep in mind that a life without music is unthinkable. Secondly, referring to our thinking/cognition, music opens up for the possibility of something humanistic that exists outside the world of language. The discussion on the theme "Is music a language?" lays open several possibilities of knowledge that are not structured as languages. Such knowledge is often holistic and linked to the concept of the hermeneutic circle; you have to understand the parts to understand the whole, and you need to understand the whole to understand the parts. In approaching the Hermeneutic method studying the phenomenon of interpretation, we need to refine the discourse in using terms like explanation and understanding. As verbal statements, they are both descriptions, but they will be used to differentiate between perspectives and consequences of searching for explanation or understanding.

   We usually distinguish between three different kinds of scientific explanations: Causal, Functional and Intentional explanation. Causal explanations are mostly used in descriptions of inorganic nature and physics (the natural sciences), often related to the idea of cause and effect, describing the relationship between one event and another. This relationship is sometimes expressed in a way where the more complicated phenomenon is explained by pointing to its constituents like "Sounds consists of spectra." Causes are often separated into two types; necessary and sufficient causes. If x (breathing) is a necessary cause of y (a sound in a flute), then the presence of y necessarily implies the presence of x. The presence of x, however, does not imply that y will occur. (It is possible to breathe without making a sound in a flute). If x (breathing) is a sufficient cause of y (a sound in a flute) then the presence of x necessarily implies the presence of y. However, another cause z (the natural wind) may alternatively cause y. Thus, the presence of y does not imply the presence of x. Conditional statements are not statements of causality. An important distinction is that statements of causality require the antecedent to precede or coincide with the consequent in time, whereas conditional statements do not require this temporal order.

   Functional explanations are mostly used in the description of organic nature, biology and are sometimes called operational explanations. Émile Durkheim (1858-1917) pointed out that the determination of function is necessary for the complete explanation of the phenomena in some parts of sociology. To explain a

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[2] (Habermas, 1989)

social fact, it is not enough to show the cause on which it depends; we must also show its function in the establishment of social order. Functional explanations (sometimes referred to as operational explanations) connect elements and events but do not necessary bring a better understanding of each element. It is possible to make a functional harmonisation of a melody in a rather operational way without an understanding of style and character of the melody. Describing a functional element in the listening process, we could correctly say "cochlea transform sound waves to nerve impulses." Our understanding of the actual sound might not be more profound from that explanation. However, understanding the dramatic change in making sound impressions open to any associations through the brain's nerve impulses will have an impact on our understanding of the musical experience.

In intentional explanations, the human mind is involved. Behind any human action, there might be an intention, conscious or unconscious. To describe and understand human actions it is necessary to go beyond the observable objects and detect the intentions; whether they are individual or a result of social pressure. Intentional explanations are widely used in the humanities. The search for a composer's intentions is a constant theme in interpreting music, at least in some traditions. Likewise, the human ability to transform sign to symbol makes intentional explanations of importance describing human activity.

I will illustrate the three kinds of explanation in line with my version of *Ogden's triangle*. The B-C relation was arbitrary in Ogden, and now it can illustrate the random relation to the context of functional explanations.
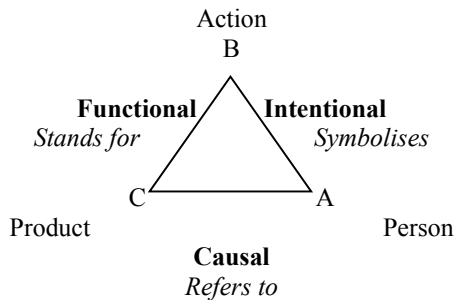

Figure 8. Scientific explanations

Building knowledge from explanations is a cumulative process, an addition of observations. It represents what is known as learning by description. Understanding is explanation plus something different from explanation; a combination of old material and new insight and interpretations.[3] This is learning by acquaintance. Ordinary usage does not make a sharp distinction between the words "explain" and "understand." Practically every explanation, be it causal or

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[3] In Dreyfus' model of skill acquisition the explanations works well at the two first levels, but from III Competence, you activate an understanding / adopt a hierarchical view of decision-making.

teleological or of some other kind, can be said to further our understanding of the world. But "understanding" has a psychological ring which "explanation" has not. Understanding is also connected with intentionality in a way explanation is not. As G. H. von Wright writes "One understands the aims and purposes of an agent, the meaning of a sign or symbol, and the significance of a social institution or religious rite."[4] He distinguishes two main traditions in the history of ideas, the Aristotelian and Galilean, differing as to the conditions an explanation has to satisfy to be scientifically respectable. These two are usually characterised as causal versus teleological explanation, sometimes also called mechanistic and finalistic. In judging your musical performance referring to actual incidents, would probably make a causal or mechanistic explanation while referring to your intentions and the musical expression you managed to create would be a teleological or finalistic explanation.

One noticeable difference between explanation and understanding is that learning by acquaintance (understanding) results in almost irreversible knowledge. Once you have learned to cycle, it is nearly impossible to unlearn it, while new explanations are much more adaptable in your stock of knowledge. When there is ambiguous information, the need for interpretation is evident, and interpretation can bring understanding much more efficiently. The object of understanding is a physical phenomenon (the sound of music) that refers to or expresses an intellectual content (the musical experience) that involves our ability to create symbols. This we could call an indexical definition relating the physical phenomenon to our mind. It requires the sender's meaning (What was the composer's intentional meaning), the meaning of the message (What is the meaning of different musical expressions), and the receiver's conceptualization of the meaning (How will today's listeners understand the music). As such, the hermeneutic method seeks to expose this ambiguity by raising three fundamental questions concerning the signs in the communication.

1. What were the sender's intentions in producing the sign/act? (**A** - B)
2. What kind of signs did the sender use to express the meanings of his intentions? (A – **B** – C)
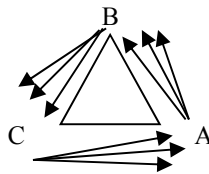3. What does the sign/act express to a receiver? (**C** – A')

Figure 9. The ambiguous situation of interpretation

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[4] (Wright, 1971, p. 6)

For the musician as well as the listener, the sounded musical work is the primary source, and he/she has to give meaning to the content of the sense impressions. To make these impressions meaningful as aesthetic objects Nikolas Luhmann (1927-1998) writes, "we claim that the work of art is produced exclusively for the purpose of communication and that it accomplishes this goal or fails to do so by facing the usual, and perhaps even increased, risks involved in all communication. Art communicates by using perceptions contrary to their primary purpose"[5] I will, present an alternative model of communication with a focus on interpretation (i.e. the hermeneutic process/method putting ontological elements into an epistemological frame). It will be illustrated as a triangle with several layers of discourse/terminology. I shall start with the 'neutral ground' using a practical example from everyday life before applying this to music.[6]

<center>A MODEL OF COMMUNICATION</center>

A person (A1) approaches another person (A2), and A1 lifts his right hand to greet the person he approaches. When the approaching person has identified this act as part of a greeting ritual, the person in question will (likely) lift her right hand to return the greeting. I will describe this situation with a terminology across three levels. Level 1: A1 has an intention to greet A2 and acts by raising his right hand (element B). A2 identifies the act (B) as a product in the context of greeting rituals (element C) and lifts her right hand. To identify a sign is to categorise a segment of reality (the act) as a single element (product) classifiable in a pre-existing category (context). As far as both perceive the greeting alike, that is, relate it to the same familiar context of greeting rituals, a meaning transfer of A1's intention to A2 has been possible. A2 has interpreted A1's action.

This can result in a joint action (they greet one another) given that they have a shared understanding indicating that it is relevant to shake hands in this situation. Lacking this shared understanding the sign or gesture can still be identified, but the consequence depends on the interpretation that A2 attributes to the sign. Interpretation is thus more than the identification of signs. Interpretation also involves situating sign identification within the interpreter's mode of expectation (A2's intention), where A2's appraisal of consequences, that is to say, possible contexts and the sign's potential come into play in addition to the identification of the sign and its contexts.

On level 2 the elementary situation can be described as follows: A person has a belief (the personal meaning) (A) that is shown through the signs used (B) to express the action (C). We can use different methods of explanation (discourses) for the different relations in the model. The beliefs of the person can be articulated as intentional explanations. Identification of the sign is given through operational explanation (operationalisation of the sign), and the understanding of what it expresses can be explained through causal explanation (which is to say, a discovery

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[5] (Luhmann, 2000, p. 22)
[6] I have used this model in Dahl (2011).

of the causal connections obtaining between expression and the perceivers of the expression). While the person, action and product (all at level 1) are observable to others, only the sign is directly observable on level 2.

The elementary situation can also be described on a third level, as follows: A person has a horizon of understanding (representational world) (A) evident in the choice of ideological statements (B) in given contexts (C). In our case, this means that the person has a conception of the elements of a greeting ritual and of situations in which they are typically used. Implicitly, these elements are culturally conditioned: what counts as belonging to a greeting ritual varies from culture to culture. These differences might be described as different ideological superstructures that set up the framework for the development of the cognitive structures in greeting rituals. Within each cultural circle, an intersubjective agreement (understanding) exists about which expressions (ways of understanding sign elements) are presupposed for the signs to be understood as a greeting. In our culture, the right rather than the left hand is the one for a greeting. This kind of understanding presupposes an imaginary organisation of the elements or signs in relation to the ideological frames constituting the cultural circle. This organisation can be called a pre-judgment in Gadamer's sense,[7] as far as it is not the conscious act of an individual but belongs to her way of being.

The same description can be applied to music; what differentiates musical action from other types of action is the way these actions communicate. These three levels are summed up in this way: To play a piece of music is when a *person* (musician) make some *actions* delivering a *product*. Our symbolic ability suggests that the musician had some *meaning* behind the *sign* he *express*ed. Ours accept of different realities (the need for understanding in addition to explanations) implies that the musician had a Horizon of notions/understanding that contributed to his action in such a way that his choices can be related to an Ideology and the Context of his performance. The aim of an interpretation is to establish a coherent connection between all elements in the communication process; i.e. to give understanding. The horizon of understanding represents all our experiences and attitudes that we have and that we do not have our attention directed towards at the moment of the impression.

According to Luhmann, "Communication succeeds and is experienced as successful when three selections (information/utterance/understanding) form a unity to which further communication can connect."[8] The decisive step is the third step in understanding: the identification of the difference between information and utterance, between the 'difference which makes a difference'[9] and the fact that someone has uttered that information. This model allows the inclusion of three basic philosophical terms: subjectivity, objectivity and intersubjectivity. The work of music in its performance is the object of understanding that we wish to interpret. What *we* are is a collection of subjects, that is, listening persons in relation to the

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[7] (Gadamer, 1960); it also fits into System 1 in Kahneman (2011).
[8] (Luhmann, 1995, p. 243)
[9] Luhmann uses an expression from Bateson (1972, p. 315).

object of understanding. And what this model makes room for is the need for a third component that makes explicit culture-bound perspective of the interpretative processes, a point linked to intersubjectivity as a middle position between the subjective and the objective. The wealth of standard features and individual elements in the musical world that we experience as listeners imply that a communicative model must be able to account for such similarities and differences in interpreting music. Thus, we can illustrate the model:
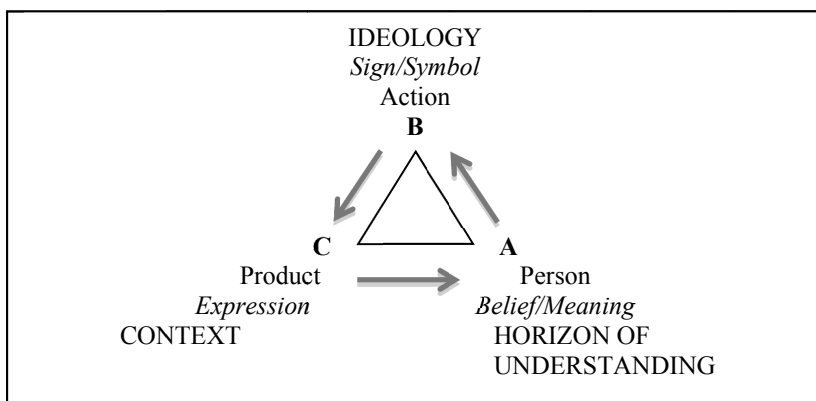

Figure 10. Model of communication

The most fruitful aspect of this model is that it distinguishes between action/sign/ideology (B) and product/expression/context (C). Compared to the communicative chain in Figure 5, this distinction are linked to the difference between ideas and objects, but in this model, the communication is no longer a one-way chain. Consequently, the possibility arises for describing the communicative message both from the side of the receiver (via product/expression/context) and of the sender (via action/sign/ideology). In an interpretative context, this makes it possible to describe a work of music from the connections between the composer's intentions (to the extent they are known) and the actions/signs/ideologies with which the work appears. The great tradition of monographs on composers' works and lives belong here.

It is also possible to regard the work as an objective entity, an accumulation of actions and signs within an ideology manifested in a product of expression in a given context. This approach analysis of the work without reference to the originator's intentions.[10] This kind of analysis is an option for the listener as well as the musician. In both cases, a relation to context (history of style or categorisation of the genre being the most usual) will be implicit, using the terminology of a common language of music. I will underline that it is not possible

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[10] In line with Roland Barthes's theories about the reader constructing the text. "The Death of the Author" (Barthes & Heath, 1977, pp. 142-148).

to establish a neutral analysis free of both the sender's and receiver's horizons of understanding since the objective entity we are speaking of in this case is a musical expression and this situation involves our capacity to create symbols and signs.

Many examples are to be found in which descriptions of the ideological dimension are conflated with descriptions of cultural context. In these cases, the result is that attribution of causal connections is made between sign and meaning, rather than signs being described operationally in relation to the intersubjectivity of context. Thus, the analysis appears as a definitive text about the work and its ontology, with little room for other interpretations.[11] The challenge in each analysis is then to see what connections exist between sign and ideology (historical style theory) and between sign and the expression it can manifest in given contexts (operationalisation of the objective sign in an intersubjective context like musical gestures and topoi). Confusion of these descriptive levels occurs in all areas of research in the humanities and is in no way unique to musicology.

What makes this an interesting communication model is its insistence on the necessity of reflecting upon the difference between sign and expression, between the sign as an element in the object of understanding and expression as an element in the intersubjective context of understanding. The model shows that the significance/meaning of music for the public is not only dependent on the actions/signs and the ideological superstructure discoverable in the work, but that these elements must be operationalised according to that context and those expressions in which the sound product appears. This intersubjective context of operationalisation forms the basis for the establishment of code recognition, interpretive communities, invented traditions[12] and good taste. Moreover, it is in this intersubjective context that the personal legitimacy of experienced music is transmuted into public legitimacy through the application of a musical discourse. This does not undermine the ontological basis of music, but in this situation, I would say that the listener's value-driven statements are more dependent on the communicative context and its epistemological potential than the ontological chain of elements in music.

Given the listener's approach, it is important to underline that on sounded music point B is not delimited to the bounds of language. Action, sign and ideology are in the first place independent areas of knowledge that only partially permit linguistic description. However, as action, sign and product are observable to others, it is possible to characterise them through verbal expression. We can describe a good deal of the ideological superstructure tied to both musical work and musical genre though such descriptions must remain partially incomplete since the musical expression may contain inherent musical qualities (implicitly described as music is all about music, sonically moving forms, absolute music, musical experience, etc.). Therefore, a remainder of the experiential content that does not allow a verbally formulated interpretation will always be relevant. This illustrates that the problem of incommensurability cannot be excluded when we discuss the connections

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[11] Music criticism (in line with Hanslick) could be an illustrative example.
[12] (Hobsbawm & Ranger, 1983)

between language and music.[13] On the other hand, this lack of commensurability makes different discourses possible and renders them a resource for establishing our knowledge about music.

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[13] (Kuhn, 1977)

WHAT HAPPENS TO THE MUSIC WHEN YOU ARE LISTENING?

INTRODUCTION

When listening to music, we listen to much less than what we hear i.e. we are not aware of the entire gamut of audible impressions. Listening is an active cognitive process partly structured by our consciousness and our epistemological potential, and adapted to the actual impressions. These impressions are not restricted to the sounds themselves but include the whole situation where there is some musicking.[1] Nevertheless, in any situation that the listener identifies as listening to music, the impact of his/her perspective and musical experience is of great importance for the emergent meanings of the music. The most remarkable consequence of this approach is that the sensation, perception and cognition involved in establishing a musical experience is not at all restricted to the aural input (the sounding event). To identify the input as 'music,' we connect to and activate a great variety of available information from our horizon of understanding or our epistemological framework. Moreover, our interpretation is a result of any differentiating procedure in developing meaningful concepts.

THE LISTENING PROCESS

The listening process will be described here as having five stages. In the literature, there are several other possibilities.[2] The first stage is sensing the acoustical sound waves in our sensory system, largely through hearing via the outer and middle ear, but also through tactile impressions from the whole body. The outer ear includes the pinna, the visible part of the ear, as well as the ear canal, which terminates at the eardrum, also called the tympanic membrane. Because of the asymmetrical character of the outer ear, the sound is filtered on its way into the ear depending on from what vertical location it is coming. The eardrum is an airtight membrane, and when sound waves arrive there, they cause it to vibrate following the air pressure oscillations of the sound. The middle ear consists of a small air-filled chamber that is located medial to the eardrum. Within this chamber are the three smallest bones in the body, known collectively as the ossicles, which include the malleus, incus and stapes (sometimes referred to colloquially as the hammer, anvil and stirrup

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[1] Using Christopher Small's concept covering most circumstances and positions (Small, 1998, p. 9).
[2] In developing my description of these five stages, I have benefited greatly from the following: Bregman (1990), McAdams and Bigand (1993), Luhmann (1995, 2000), Sloboda (2005) and Patel (2008).

respectively). They aid in the transmission of the vibrations from the eardrum to the inner ear. The purpose of the ear's unique construction is to overcome the impedance mismatch between air and water, by providing impedance matching. The stapes transmit sound waves to the inner ear through the oval window, a flexible membrane (the Basilar-membrane) separating the air-filled middle ear from the fluid-filled inner ear. The round window, another flexible membrane, allows for the smooth displacement of the inner ear fluid caused by the entering sound waves.

The second stage consists of the sensory transition in cochlea where mechanical oscillations are transformed into nerve impulses. The basilar membrane is tonotopic so that each frequency has a unique place of resonance along it. Particular frequencies are high at the basal entrance to the cochlea, and low at the apex. Basilar membrane motion causes depolarization of the hair cells, the specialised auditory receptors. In this way, the patterns of oscillations on the basilar membrane are converted to spatiotemporal patterns of firings that transmit information about the sound to the brainstem. The sound information from the cochlea travels via the auditory nerve to the cochlear nucleus in the brainstem. It is at this stage that theories of musical experience based on pure sound impressions fail. In our consciousness we do not hear a pure sound (sound waves); the nerve impulses we receive are associated with sounds, but not without reference to an actual situation affording multimodal impressions.

In the third stage, the establishing of primary interpretative elements becomes the fundamental source of knowledge. It is worth noting that this process only requires that the interpretative elements are established by differentiation. Interpretative elements are to be identified, but we can handle these elements as impressions, being basic to our interpretation as long as they are differentiated, even when they are not necessarily identifiable. This differentiation is based on our previous knowledge and could be described as cognitive automaticity (as a contrast to the more reflective awareness).[3] There is a certain resemblance between this description of an interpretatively differentiating element and the description or conception of différance in the works of Jacques Derrida (1930-2004). He states "that *différance* should function not as a concept, not a word whose meaning should be finally 'booked into the present', but as one set of marks in a signifying chain which exceeds and disturbs the classical economy of language and representation."[4] Niklas Luhmann (1927-1998) uses "distinction" as his primary element in a conceptual repertoire consisting of the concepts of distinction/form/observer that thematise a precondition for the introduction of indications into a world that remains undetermined.[5] What this boils down to is that we need to be able to differentiate the impressions based upon the first three stages in such a way that you can make an interpretation (this is music/ this is not music) without identifying the cause of your interpretation. In this process, we can identify

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[3] Or as System 1 in Kahneman's terminology in "*Thinking Fast and Slow*" (2008).
[4] (Norris, 1987, p. 15)
[5] (Luhmann, 2000, p. 36)

an impression as music without any identifiable property (ontological element) in our awareness towards the aural sound.

Establishing of an interpretative element can be viewed as activating a cognitive schema, and as such, it is open to generalisation, consolidation, differentiating and unification.[6] There appears to be reasonably good agreement that the grouping principles that come into play at this stage coincide to a great extent with Gestalt psychology's principles for the creation of forms: closeness, similarity, continuity, symmetry and completion. This makes possible a description of changes in the listener's personal development towards an "experienced listener"[7] that relates to his/her ability to discriminate the sound (the sounding/ontological element).[8]

The next epistemological stage, stage four, is the development of signs. Music is a product of human activity, and a music performance can be described as a form of objectivation.[9] A sign in an interpretative process is to be distinguished from other objectivations in its intention to serve as a pointer (indicator) for meanings. The intention of a musical sign is explicit in that the sign is formed with the purpose of referring to something meaningful beyond the actual acoustic soundscape. The possibility of establishing meaning-bearing signs in music arises when different interpretative elements are combined and compared through generalisation, consolidation, unification and differentiation. They are synthesised through the listener's subjective experience of possible interpretative elements to form a meaningful sign. This description individuates the listening experience and explains why individual listeners assign different interpretations to a single musical performance.

At the same time, listeners within a particular music culture share large common areas in their experience of interpretative elements, and constitute what Stanley Fish (1938-) called "interpretative communities."[10] The codes they share are the interpretative elements, which have achieved a degree of social co-operation that we can designate as typification: the sounding elements have liberated themselves from the original here-and-now situation and established themselves as typified objectivations of human activity, i.e. as communicative elements (topoi). The constitution of a sign is not restricted to the audible dimension (as the audible energy in this stage is transformed into cognitive energy). In addition to the aural stimuli, several other elements are involved in the listening process, influencing the creation of meaningfulness. These elements are of subjective and intersubjective character; they are part of the epistemological basis the listener has acquired through participation in musical contexts.[11] The intersubjective elements can be seen as a special case of our social construction of reality. The tradition of musical

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[6] (Piaget, 1971). Any kind of our knowledge is embodied in schema.

[7] (Lerdahl & Jackendoff, 1996)

[8] This represents a possibility of placing the listener in a complete different categorisation than in Adorno (1975).

[9] The terminology objectivation, signification and typification are inspired by Berger and Luckmann (1966)

[10] (Fish, 1976)

[11] Cf. chapter Two "Cross-domain mapping" in Zbikowski (2002).

literacy in Western musical discourses renders the concepts in use culturally constructed. The link between the concept and its denotation becomes crucial, and the establishment of a sign becomes more or less bound to notable/readable or audible categories. This tradition contributes to the multiplicity and variety of conceptions that are employed to characterise musical experiences.

In the final stage, the bodily process could be described like this: The sound information from the cochlea travels via the auditory nerve to the cochlear nucleus in the brainstem. From there, the signals are projected to the inferior colliculus in the midbrain tectum. The inferior colliculus integrates auditory input with limited input from other parts of the brain and is involved in subconscious reflexes such as the auditory startle response. The inferior colliculus in turn projects to the medial geniculate nucleus, a part of the thalamus where sound information is relayed to the primary auditory cortex in the temporal lobe. The sound is believed first to become consciously experienced at the primary auditory cortex. Around the primary auditory cortex lies Wernicke's area, a cortical area involved in interpreting sounds that are necessary for understanding spoken words.

However, another description is also possible. The adaption in the listening process is the experience of meaningfulness arising from the assimilation and accommodation of meaning-bearing signs.[12] An assimilation is a form of adaption where an interpretative element becomes a sign through immediate or direct incorporation or absorption into the listener's existing cognitive schemata.[13] Accommodation is that form of adaption where the listener's sign structure changes as a result of the new interpretative element.[14] It is important to underline that these interpretative elements do not have to be conceptualised in linguistic/literate terms. Musical gestures and topoi can be meaningful without any linguistic boundary.[15] To the music critic, this might present a challenge, as he needs to develop an analysis of his experience and give a verbal description of his impressions. The temptation to use concepts drawn from music theory has been overwhelming for many critics. For the listener, their cognitive resources make a variety of symbolic, expressive and value-laden utterances possible without any other restrictions than the socio-cultural context of the utterance.

As a result, we can develop a great variety of listening strategies based on genre/style, affiliation to the performers or the musical work performed, and the place of

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[12] I find Piaget's terminology with its combination of biology and psychology makes an attractive, "embodied" discourse (Piaget, 1971).

[13] A typical System I process in Kahneman (2011).

[14] Not necessary a System II process in Kahneman (2011), as most of the accommodation processes are done without involving our reflective consciousness (System II). As Kahneman shows, this might result in a lot of heuristics and biased judgement under uncertainty. Only by reflecting on the final adaption, System II will be activated.

[15] One alternative perspective could be Robert Hatten's interpretation of musical gestures, where an expressive gesture is the translation of gestural cultural competency to achieve a basic level of musical understanding (Hatten, 2004, pp. 111-132). For him, the musical gesture is movement (implied, virtual, actualized) interpretable as a sign. Allied to this is the fundamental idea of what could be called the embodied paradigm in music theory understanding musical sound as inseparable from body movements (Leman & Godøy, 2010).

listening and mood. A chosen strategy might be changed due to sonic impressions, our associations or events in the social context of listening. Today, our musical knowledge is more affiliated to the sound of recorded music today than before. In his seminal book *La distinction* (1979),[16] Pierre Bourdieu (1930-2002) documented that in modern times (at least in France) aesthetic consumption had become a part of ordinary consumption and as such was more related to the consumer's socio-economical and educational class than the content of the artistic product. What happens to the music when we are listening is something that involves our horizon of understanding, our identity and ability to grasp the ongoing music. It becomes impossible for us to talk, describe the experienced music as an object. Some ontological aspects of music such as scale systems, notation practices, performance practices, etc. can still be rationalised and given a valid discourse. However, our musical experiences and appreciation (the epistemological dimension of music) are definitely a phenomenon in our mind and; therefore, the last methodology in the progress of music as an object (H-D method), via inter-subjectivity (Semiotics and Hermeneutics) will be phenomenology.

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[16] (Bourdieu, 1984)

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PHENOMENOLOGY

INTRODUCTION

In one perspective, there is a connection between phenomenology and positivism as presented in the introduction to the hypothetico-deductive method. Both methods try to describe the world/reality as we experience it. However, there is one fundamental difference, which makes phenomenology an anti-positivistic movement. Experience, in a phenomenological sense, includes not only the relatively passive experiences of sensory perception but also (and this is the big difference from positivism) imagination, thought, emotion, desire, volition and action. In short, it includes everything that we live through or perform. This approach towards a performance-situated knowledge makes phenomenology an interesting method in artistic research. Nevertheless, it is important to remember that primarily phenomenology is the study of things as they appear (phenomena). One consequence is a sharp focus on things as such. It is descriptive rather than exploratory. The creative dimension in artistic work is not in focus, but phenomenology can contribute on several other important issues. It studies structures of conscious experience as experienced from a subjective or first-person point of view, along with its "intentionality"; the way an experience is directed toward a certain object in the world. It then leads to analyses of conditions of the possibility of intentionality, conditions involving motor skills and habits, background social practices and, often, language. A central task of phenomenology is to provide a clear, undistorted description of the way things appear. Such a task can be distinguished from the project of giving causal or evolutionary explanations, which would be the mission of the natural sciences. Topics discussed within the phenomenological tradition include the nature of intentionality, perception, time-consciousness, self-consciousness, awareness of the body and consciousness of others. Phenomenology utilises a distinctive method to study the structural features of experience and things as experienced. Although elements of the 20th century phenomenological movement can be found in earlier philosophers—such as David Hume, Immanuel Kant, and Franz Brentano—phenomenology as a philosophical movement began with the work of Edmund Husserl. Following Husserl, phenomenology was adapted, broadened and extended by, amongst others, Martin Heidegger, Jean-Paul Sartre, Maurice Merleau-Ponty, Emmanuel Levinas and Jacques Derrida.

HUSSERL

The work often considered to constitute the birth of phenomenology, is *Logische Untersuchungen,* a work of philosophy by Edmund Husserl (1859-1938), published

in two volumes in 1900 and 1901.[1] This work contains Husserl's account of phenomenology as the descriptive study of the structural features of the varieties of experience; and some concrete phenomenological analyses, including those of meaning, part-whole relations and intentionality. Intentionality is one of the central concepts of phenomenology from Husserl onwards. As a first approximation, intentionality is aboutness or directedness as exemplified by mental states. For example, the belief that you are listening to the opening of Mahler's Fifth Symphony from your iPhone is about both the Mahler Symphony and the iPhone. One can also hope, desire, fear, remember, etc. instead of belief and the only change would be the intentionality in your listening, without changing the iPhone or the Mahler Symphony. Intentionality is inherent in the way that the subjects are "in touch with" the world. Husserl claims that every intentional act has an intentional object, an object that the act is about, but certainly, all acts do not need to have a real object. The object of an intentional act is external to the act itself. Its object is a transcendent object.

We ordinarily think of perception as a relation between the world and ourselves. We think of perceptual experience as involving the presentation of three-dimensional spatial-temporal objects and their properties. However, this view, sometimes known as naïve realism, has not been the dominant one within the history of modern philosophy. An indirect realist view holds that there really are both kinds of object. Worldly objects both cause and are represented by sense data. Nevertheless, this has often led to a troubling scepticism regarding ordinary physical objects: one could be experiencing the same sense data, even if no ordinary physical objects were causing one to experience them. Therefore, for all one knows, there are no ordinary physical objects. Intentional theories of perception deny that perceptual experience is a *relation* to the object. Rather, perception is characterised by intentionality. Our conscious experience has an intentional object, but not a real one.

If perceiving is characterised by intentionality, what distinguishes it from other intentional phenomena, such as believing? What is the difference between listening to a performance of Trauermarsch from Mahler 5 and believing that they are playing the Trauermarsch from Mahler 5?[2] Sensory data are, according to Husserl, "animated" by intentions, which "interpret" them. Thus, although perception is an intentional phenomenon, it is not purely intentional; it also has non-intentional, sensory qualities. A physical thing is given in mere 'modes of appearance' in which necessarily a core of 'what is actually presented' is apprehended as being surrounded by a horizon of 'co-givenness.' Husserl refers to that which is co-given as a "horizon," distinguishing between the internal and external horizons of a perceived object. The internal horizon of an experience includes those aspects of the object (rear aspect and insides) that are co-given. The external horizon includes

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[1] (Husserl, 1901; Husserl, Moran, & Findlay, 2001)
[2] If you know the original symphonic version and listen to Uri Caine's version, you might experience this dilemma quite strong (Mahler et al., 1997).

those objects other than those presented that are co-given as part of the surrounding environment.

This division between internal and external horizon of experience can be useful in describing the musical experience. The music as a sound object activates the inner horizon focusing on aspects that can be elaborated in a descriptive musical style, while the external horizon includes those objects other than the sound, like the venue of performance, the social context but also the individual associations different from the musical domain. Husserl often uses the term "anticipation" to describe the way in which the merely co-presented is present in perceptual experience. As he says,

> there belongs to every external perception its reference from the 'genuinely perceived' sides of the object of perception to the sides 'also meant'—not yet perceived, but only anticipated and, at first, with a non-intuitional emptiness … the perception has horizons made up of other possibilities of perception, as perceptions that we could have, if we actively directed the course of perception otherwise.[3]

This complicated description might be easier to understand if we connect it to a situation listening to the same recording several times. Then we do make the different anticipation of the musical events as we actively directed the course of perception in new directions each time we play/listen to the music.

PHENOMENOLOGICAL METHOD

In developing an interpretation of a musical work, there is a constant dialogue between external inputs (the notated music, the search for background information, and the sound impressions of our playing) and an internal, introspective analysis of the result compared to an ideal performance of the piece. As we have seen in the previous chapters, there are different methods of knowledge acquisition that can be used in developing an interpretation towards an ideal performance. The phenomenological method is not just an introspective analysis of a phenomenon. Husserlian phenomenology is a discipline to be undertaken according to a strict method. This method incorporates both the phenomenological and the eidetic reduction. The phenomenological - sometimes referred to as the epistemological - reduction should enable the phenomenologist to go back to the things themselves to search for the essence of things ("Wesensschau"). As such, it is vital that we can look beyond the prejudices of common sense realism, and accept things as actually given. This means that all judgments that posit the independent existence of the world or worldly entities, and all decisions that presuppose such judgments, are to be bracketed (put in epoché) and no use is to be made of them in the course of engaging in phenomenological analysis. Quite often, a performance will be criticised on the impression of not fulfilling the essence of that particular musical

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[3] (Husserl, 1988)

work. In situations like this, one could say that the performer and critic did not share the same Wesensschau of the work.

There is, however, a problem with this kind of reduction. It limits the phenomenological results to facts about a particular individual's experience, excluding the possibility of phenomenology to develop general facts about an experience as such. The Husserlian answer to this difficulty is that the phenomenologist must perform a second reduction called "eidetic" reduction. The purpose of the eidetic reduction is to bracket any considerations concerning the contingent and accidental and concentrate on the essential natures or essences of the objects and acts of consciousness. This intuition of essence proceeds via what Husserl calls "free variation in imagination". For example, imagine a chair, and try to change any parameter in this phenomenon and see when it can no longer be identified as a chair (maybe it now looks more like a sofa). In this way, we can study the essence of that phenomenon (the chair). In music, the melodic material in a theme can be changed in numerous ways, but at one point, it becomes a contrast, something different from its original essence.

Eidetic intuition is an a priori method of gaining knowledge of necessities. The result of the eidetic reduction is not just that we come to the knowledge of essences, but that we come to an intuitive knowledge of essences. Essences show themselves to us (Wesensschau) although not to sensory intuition but to categorical or eidetic intuition.[4] According to Husserl, the reduction is to be applied to the "general positing" of the natural attitude; that is to a belief.

The idea of eidetic reduction has some similarities with Kant's "ohne Interesse" and the old tradition in Western philosophy of seeing the truth as a passive, uncommitted process towards eternal knowledge. When the discipline of music aesthetics developed in the 19th century, the notion of studying the aesthetic experience relieved from the sensory and social impressions in a performance became a goal for many music critics. The knowledge we have today about cognitive processes makes it impossible to fulfil the eidetic reduction. However, taken as a utopian ideal and a warning in an introspective analysis, I think there are some aspects well worth noting from the phenomenological tradition.

To illustrate the phenomenological method compared with the previously discussed ones, I have chosen to mirror the triangle, even though intentionality is fundamental in phenomenology. The reason is that phenomenology is based on the assumption that we experience the world through intentionality, and therefore, the phenomenological method is a way of analysing our mental states. For this graph, I keep the elements from the Hermeneutic model and the three scientific explanations. In the introduction to this chapter, I underlined that phenomenology attempts to describe the world as we experience it (just as this is the goal for all methodologies). Therefore, the causal link between Product (the world) and Person is relevant in illustrating the phenomenological method as well. However, the two dimensions of the phenomenological method (epoché and eidetic reduction) are

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[4] There are some similarities between Husserl's method and modern methods of conceptual analysis and imaginative thought experiments (Zahavi, 2003, pp. 38-39).

both means to analyse the world in a way that goes beyond the intentional and operational dimensions of the phenomenon.
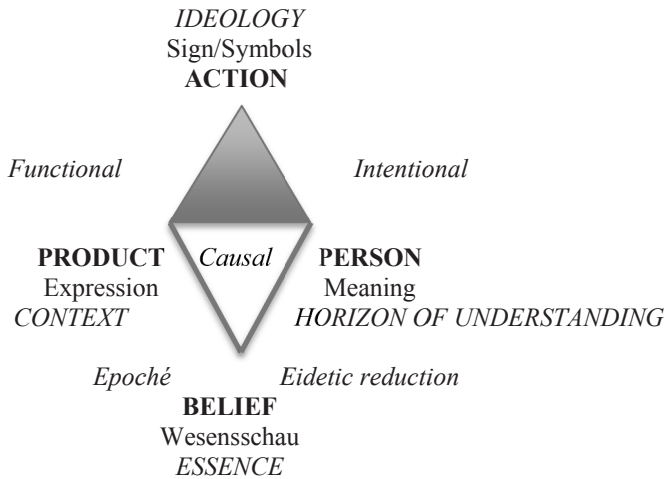
IDEOLOGY
Sign/Symbols
ACTION

Functional   *Intentional*

PRODUCT   *Causal*   **PERSON**
Expression   Meaning
CONTEXT   *HORIZON OF UNDERSTANDING*

Epoché   *Eidetic reduction*
BELIEF
Wesensschau
ESSENCE

Figure 11. The phenomenological method

The epoché is primarily a phenomenological reduction of the context of which the phenomenon (product) appears to the mind, taking an epistemological perspective. This entails going beyond the prejudices of common sense realism and accepting things as actually given. In the process of developing an interpretation of a musical work, this approach would be a reminder to relate to the score only, and not accept all the already known interpretations as the way to analyse the score. The eidetic reduction is in a way a complimentary process of testing how far you can deviate from the score without harming the essence of the work. In this process, a combination of the other methodologies and phenomenology is necessary to find the balance making the interpretation both valid and reliable.

It is widely accepted that only a few of the most significant post-Husserlian phenomenologists accepted Husserl's prescribed methodology in full. According to Heidegger and those phenomenologists influenced by him (Sartre, Merleau-Ponty), our most fundamental relation to the world is not cognitive but practical. One's understanding of the being of toothbrushes, for example, is manifested in one's capacity for utilising toothbrushes. Understanding need not be explicit or be possible to articulate conceptually. It is often embodied in "know-how". In many ways, Heidegger's description seems to fit the musician's situation better that Husserl's. The understanding of music need not be explicit (we can have several interpretations), music can only partly be conceptualised (having different master class sessions on the same piece of music is acceptable). In performing music, the amount of embodied knowledge has a crucial impact on the level of performance (musicianship is often identified with the performer's embodied knowledge in the

performance). However, as I would like to convince my readers, there is an enormous difference in abandoning any kind of knowledge in our relation to music, and to insist on the necessity of music being conceptualised to represent knowledge. In between these polarised positions, a variety of theories, methods and concepts can be of great help in developing the musicianship towards the proficiency of a professional performer.

THE FIRST-PERSON PERSPECTIVE AND TIME-CONSCIOUSNESS

Phenomenology studies conscious experience as experienced from the subjective or first person point of view.[5] Whereas others must rely on what I say and do to know what I think or feel, first-person access to psychological states are immediate in the sense of not being based on observational or inferential evidence. Rather, they have "direct acquaintance" with the mental states themselves. Literally, all the main figures in phenomenology defend the view that the experiential dimension is characterised by a tacit self-consciousness. Jean-Paul Sartre, probably the best-known defender of a phenomenological theory of self-consciousness, considered consciousness to be essentially characterised by intentionality. Reversely he claimed that each intentional experience is marked by self-consciousness. An experience does not simply exist; it exists for itself, that is, it is given for itself, and this self-giveness is not merely a quality added to the experience, a mere varnish, it rather constitutes the very mode of being of experience. He wrote, "This self-consciousness we ought to consider not as a new consciousness, but as the only mode of existence which is possible for a consciousness of something."[6] As a performer, you may experience situations where you are "in/inside" the music, where this is the only mode of existence possible, some would say the essential mode of musicianship. There is a unity between you, your expressions and the expressions in the music. Alternatively, we could say that your intentions and the intensions in the music are melting together.

There are many philosophical views concerning both the nature of the self and any distinctive awareness we may have of it. David Hume claims that reflection does not reveal a continuously existing self. He wrote:

> There are some philosophers, who imagine we are every moment intimately conscious of what we call our SELF; that we feel its existence and its continuance in existence … For my part, when I enter most intimately into what I call myself, I always stumble on some particular perception or other, or heat or cold, light or shade, love or hatred, pain or pleasure. I never can

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[5] Many analytical philosophers have criticized Phenomenology on the basis that its explicitly first-person approach is incompatible with the scientific third-person approach, although Phenomenologists would counter-argue that natural science can make sense only as a human activity which presupposes the fundamental structures of the first-person perspective.

[6] (Sartre, 1956, p. liv (54))

catch myself at any time without a perception, and never can observe anything but the perception.[7]

In Humean terms, there is no impression of a self, and as a consequence of his empiricism, the idea that we have of ourselves is rendered problematic. René Descartes' (1596-1650) famous "cogito ergo sum" (I think therefore I am) might be closer to the phenomenological position, but most phenomenologists find that the traditional rendering of the cogito affirms too much. What is certain is not that "I am aware of this chair", but only that "there is awareness of this chair." Transposed to a performer's situation, we could distinguish between "I am aware of this music" and "I have an awareness of this music." The former, referring to music as an object accessible to others, the latter to music as an experiential dimension in your mind.

Phenomenological discussions of the self and self-awareness cannot be divorced from issues concerning the unity of consciousness. Based on the Kantian view, it is legitimate to appeal to an I that unifies experiences since such entity is precisely a condition of the possibility of experience. Without such a unifying self, the experience would not be possible, and therefore the concept is legitimate. The I, on this account, is transcendental—it is brought into the account as a condition of the possibility of experience. Husserl departs from Kant, and before him Hume, in claiming that this self is experienced in direct intuition. In Kant's view, the I is purely formal, playing a role in structuring experience but not itself given in experience. In Husserl's view, the I plays this structuring role but is also given in inner experience. It is immanent in that it is on the subject side of the experience. Moreover, it is transcendent in that it is not an experience. (I will revisit this discussion in Part III.)

In the continuation of this discussion, various questions concerning time-consciousness have occupied phenomenologists. How is it that temporal parts of a melody are experienced as parts of one and the same thing? How is it that we have an experience of succession, rather than simply a succession of experiences? This seems an especially hard question to answer if we endorse the claim that we can only be experientially aware of the present instant. One solution is offered by the doctrine of the specious present that holds that we are experimentally aware of a span of time that includes the present and past (and perhaps the future). This brings to mind Augustine's expression of the extended moment. Husserl's position is not entirely unlike the present spacious view. He maintains that, at any one instant, one has experience of the phase occurring at that instant, that phase(s) that has (have) just taken place, and the phase that is just about to occur. He labels the three aspects 'primal impression', 'retention' and 'protention.'[8] The primal impression is an intentional awareness of the present event as present. Retention is an intentional awareness of the past event as past. Protention is an intentional awareness of the future events respectively. Retention and protention form a temporal horizon

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[7] (Hume, 1739)
[8] (Husserl, 1991, p. sec.40)

against which the present phase is perceived. All three must be in place for the proper experience of a temporal object, or of the duration of a non-temporal object. The temporality of experiences is constituted by a consciousness that is not itself temporal.

In music, the phenomenological perspective of time-consciousness can in music support a strong focus on the intentional dimension of time experiences. This underlines the subjective and individual character of time experience among musicians and listeners. The lack of relation between the chronological time and the experienced time creates one of the specific features in music. A professional musician will often establish a kind of standard interpretation of the core repertoire and will have to know the duration of each piece to plan concerts and gigs. In a performance situation, the musician must be aware of the temporal horizon (retention and protention) and balance this with awareness of the continuous primal impressions.

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12

ANALYSIS AND INTERPRETATION

Two Sides of the Same Coin?

INTRODUCTION

Music analysis and interpretation have a long history as separated practices. Having its roots in music theory, the analysis excelled in musicology while interpretation belonged to the performance practice. Such a division is no longer preferred due to several developments. In the second half of the 20th century, studies in performing practice no longer focused only on developing the existing musical practice but began using the historical sources from musicology studies as a point of departure for developing an interpretation. Starting with the Early Music Movement, this approach gradually came to cover all music epochs and today is known as Historical Informed Practices (HIP). There has also been a change in the scope of musicology, from focusing solely on music theory and literal sources towards a musicology covering all aspects of human understanding of music. An external force has drawn analysis and interpretation closer. Over the last two decades, a new organisation of higher education (in Europe) has resulted in a fusion of institutions into big university units including several different studies of professions (like music performance, arts, health care, teacher training, etc.). In many cases, musicology and music performance suddenly found themselves belonging to the same faculty, an arrangement that greatly facilitates an exchange of ideas.

The primary impulse of analysis is empirical: to get to grips with something on its own terms rather than in terms of other things. Analysis is the means of answering directly to the question "How does it work?" It is concerned with the search for internal coherence within a musical work. From its nuclear activity, the comparison arises the measurement of the amount of difference or degree of similarity. Together, these two operations serve to illuminate the three fundamental form-building processes: recurrence, contrast, and variation.

To answer the question raised in the title of this chapter, I will need to present some snapshots from the history of musicology and analysis, followed by some elements in the development of interpretation practices. By doing this, I hope to illustrate that analysis and interpretation are positioned knowledge. This constellation entails that it might be difficult/challenging to translate/transform knowledge from one perspective/point of view to the other. (This topic touches upon the problem of incommensurability discussed by Kuhn.) Seeing analysis and interpretation in that perspective is important for answering the question because it may be necessary to investigate the essence of what I in the headline called the coin, to know the value of it as a metaphor.

MUSICOLOGY AND ANALYSIS

The Austrian musicologist Guido Adler (1855-1941) provided the first description of musicology as a discipline of modern universities. In his article "*Umfang, Methode und Ziel der Musikwissenschaft*" (The scope, method, and aim of musicology)[1] published in 1885 he outlined a separation between the historical and systematic dimensions of music. For Adler, the historical field consisted of the organisation of music history into epochs, periods, and nations. In contrast, the systematic field was to consist of the internal properties and characteristics of music such as harmony and tonality. For nearly a hundred years a great deal of musicological activity after Adler could be seen to reflect this division, with the study of music history often reflecting large-scale categorization and construction of a canon of the Western tradition of classical music. The development of music analysis and the emergence of particular theories of harmony, tonality, and form, are all more or less bound to the music score as their research object has adopted Adler's systematic field. The rationalising and positivistic impulses in Adler's prescription and the search for objectivity to a number of musicological contexts were dominant in musicology for nearly a century.

Musicology is broadly defined as the thinking about and study of music. Both these dimensions are present in the acts of composing and performing music. In a historical narrative, the point of origin could be traced back to the reflections upon nature, content and function of music that existed in ancient Greece, especially in the theories of Plato and Aristotle. Later, but still distant, writings upon music took the forms of Medieval and Renaissance treatises and polemics, like Augustine's *De Musica* (387)[2] where he talks about music as the extended moment; moreover, he is probably the first to write about the importance of musical stops. Boethius (480-524) wrote his *De institutione musica* (c.500)[3] where he propounds the ancient (Pythagorean) idea about numbers in everything including music. Primary thinking about music should be most concerned with musica mundane (the harmonies of the universe), then with musica humana (the harmonies and symmetry of the human body), and least with musica instrumentalis, the performance practice in music.

The Enlightenment of the 18th century witnessed the rationalisation of knowledge and consequently further enhanced the position and status of music within an intellectual discourse. Publishing his *Treatise on Harmony* in 1722, Jean-Philippe Rameau (1683-1764) initiated a revolution in music theory.[4] He attempted to derive universal harmonic principles from natural causes. His methodology incorporated mathematics, commentary, analysis and a didacticism that was specifically intended to illuminate in a scientific way the structure and principles of music. The Enlightenment also gave birth to the emergence of a new historical consciousness that would develop further during the 19th century. Most important

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[1] (Adler, 1885)
[2] (Augustinus & Jacobsson, 2002)
[3] (Masi, 1981)
[4] (Rameau, 1971)

for the concept of music in European culture was the turning of the philosophical inquiry into the nature of music in the shape of the aesthetics of music. As musical experience was brought into the intellectual discourse of music this field, combined with historicism, became the central characteristics of the 19th century defining the Romanticism of that time. Not all were happy about this development. In his very influential book "*Vom Musikalsich-Schönen*" (1854)[5] Eduard Hanslick (1825-1904) pointed out that since it is impossible to deduce a compositional law from a music experience, how could the individualistic knowledge of a musical experience bring anything to musicology?

In many ways, Romanticism reflected the literary and linguistic dimensions of musical experiences. Some composers were authors (like R. Schumann, E. T. A. Hoffman, and R. Wagner) and philosophers wrote extensively about music and art (like Herder, Schelling, Hegel, Schopenhauer, and Nietzsche). The communication about their music and art experiences became one of the most important class identifications of the new liberal middle classes. In this context, the old question about inherent qualities in music acquired a new perspective; not only focusing on the material qualities of the musical sound but also that of the listener's subjective experiences, his/her consciousness. Combined with the debate about absolute and programme music, musicology became a university discipline linked to formalism and the literate dimensions of music, increasingly detached from the music lovers' appreciation of music performances.

One impact of the Modernism in the early 20th century was both a heightening and a subverting of these perspectives. The rationalisation of modernity provided a context for the systematic study of music in a rather formalistic musicology. At the same time, the study of music psychology (appreciation and cognition) and psychoacoustics began producing impressive results, though outside the musicological departments. Even if the object/topic of the study was the subjective experience of music in listening and playing, the methodological approach was usually the hypothetico-deductive (or hypothetico-normative) methods used in natural science.[6] Inside the music department historiography became the preferred research area, producing monographs on composers' life and work, textbooks in analysis of music works and compositional styles.

Musicology has undergone dramatic changes since the 1980s. In 1980, the American musicologist Joseph Kerman published an article titled "*How We Got into Analysis, and How to Get Out.*"[7] Following up with a book in 1985; "*Contemplating Music* (USA) / *Musicology* (UK),"[8] he outlines the divisions of musicology and presents a critique of what he perceives as the formalism and positivism that had come to define musicology. Kerman outlined the problems of analysis, its ideological nature and consequently the relationship between analysis and organicism as a "ruling ideology." His plea for a more "humane" form of

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[5] (Hanslick, 1986)

[6] As in *The Psychology of Music* (Seashore, 1938).

[7] (Kerman, 1980)

[8] (Kerman, 1985)

criticism may be rather vague, but the article and the book did make an impact. Much of the writing that came after Kerman—some of which has been described as forming a New musicology—often acknowledges the power of Kerman's arguments. It is possible, therefore, to say that musicology became more critical and less positivistic from the 1980s, more concerned with interpretations and less with facts. It has also become more interdisciplinary as the boundaries between different types of music are partially erased, and the search for new critical models pushes way beyond the limits of traditional musicology.

INTERPRETATION

The barrier between musicology and the study of musical experience has been lowered in the last 30 years, and new theories combining cognitive and linguistic approaches have shed light across the methodological abyss. In the same period, the study of musical performance has gained much more interest, becoming a part of musicology both as studies of different kinds of interpretation traditions and performance practices. A century with gramophone recordings has given the study of interpretation an element of objectivity that can easily override other dimensions of interpretation. This warning reflects my impression that the recording industry has never aimed at giving a documentation of musical performances as such.

Looking at the performing context, at least four primary domains for research can be defined: the performer, the music (as sound and often as score), the venue and the listener. Raising the fundamental question "What makes some performances come across as 'musical'?" John Rink in his *Musical Performance* (2002)[9] touches upon the paradigmatic shift from the positivistic question about what makes/identifies music to the more subjective question; why I as a listener rate one performance more highly than another one. The old question about the inherent qualities in music reflects a search for measurable quantities in music as sound while the modern question about musical experiences is a search for subjective quality in our concept of music. These issues illustrate the double ontological status of our concept of a music work. A performance of a music piece is an identification and materialisation of the music work, but at the same time, we accept the idea of the performance as one of many possible manifestations of this particular music work.[10] Traditional musicology has a great deal to offer in the search for knowledge about the music work. Performance studies can add to this an understanding of the dynamics of performance, the dialectical process between performer, the music, the venue and the listener, explaining why some performances come across as "musical."

Until now, performance studies have focused on the performer: how can scientific methods from different traditions contribute to the understanding of how to perform music. A basic idea in performance studies is that the music score is

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[9] (Rink, 2002)
[10] Sometimes I find it possible to differentiate between the term "music work" used solely to the sounding or printed object, and "musical work" when referring to the listening experience.

neither a valid nor a reliable representation of the musical work. Taken to its extreme, this seems to be incommensurable with traditional musicology that is so heavily bound to the score and manuscripts. However, by accepting that it is our mental/cognitive ability to establish symbols and meaningfulness that makes some sounds musical, it is possible to bridge the troubled epistemological waters between Adler's musicology and New musicology. Over the last ten years, a general agreement has emerged that studies of performance practice and traditional musicology appear to be mutually dependent.

Going back to Aristotle his concept of *episteme*, intellectual knowledge, was contrasted with *techne*, the practical knowledge required for making (poesis) and doing (praxis). Also, the concept of *phronesis*, or practical wisdom, in particular, knowledge of how to conduct oneself (especially in a moral sense), was understood in contrast to intellectual knowledge, and it was known to be deficient when it came to worldly wisdom. In the 20th century, this opposition was thematised in analytic philosophy as that between 'knowing that' and 'knowing how', sometimes simplified as the difference between knowledge and skill. Michael Polanyi (1891-1976)[11] elevated practical knowledge—which, being tacit, implicit knowledge, finds no direct discursive or conceptual expression—to the foundation of all knowledge. This position reverses the hierarchy of knowledge. The non-conceptual knowledge embodied in art has been analysed in many different ways; to outline three historical examples; In Baumgarten's (Aesthetica I-II 1750-58)[12] as 'analogon rationis' through which great art can manifest perfect sensory knowledge. In Immanuel Kant's (Kritik der Urteilskraft 1790)[13] as 'cultural value' (Kulturwert), the quality through which art gives food for thought and distinguishes itself from the mere aesthetic gratification of the senses. Theodore W. Adorno names it the 'epistemic character' (Erkentnischarakter), through which art 'articulates' the hidden truth about the dark reality of society.[14] All three add important aspects of the non-conceptual (non-verbal) knowledge, filling out the contextual frame of this kind of knowledge.

THE COIN

So far, I have tried to make a short description of the history of musicology, its turning point in the 1980s and some characteristics of interpretation and performance studies. These two research traditions could be differentiated as being research *on* the arts (musicology) and research *for* the arts (performance studies). Both of them focus on art objects and the creative processes generating musical compositions and performances. They can involve aesthetic, hermeneutic, performative, expressive and emotive points of view, but they are mostly concerned with the ontological question: What is the nature of the object?

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[11] (Polanyi, 1962)
[12] (Baumgarten, 1961)
[13] (Kant & Weischedel, 1790/1974)
[14] (Adorno, 1998)

Going back to the model of the communicative chain presented in Chapter 6 "Where is the musical work?" we could apply analysis and interpretation as two different perspectives on the object notation. Analysis can use the score as a representation of the musical work and primarily trying to find the coherent elements in the work making this a piece of music. A broader musicological approach would add several research areas such as the historical and cultural context of the composition, the composer' life and work, and the historical development of style to describe the musical object. Both perspectives try to reverse the thinning process from the composer's original idea of a musical work to his music notation and supplied with other literate sources making an impact on that kind of discourse.

In developing an interpretation, the performer uses the music notation/score as a point of departure. However, there are several differences between the performer and musicologist. The performer has to thicken the meaningful elements in the score to make a consistent interpretation. In that process, knowledge about the thinning process and the possible reversing illuminated by analysis/musicology is of importance. Moreover, many other aspects come into play: The idiomaticity of the composition, technical challenges, and frame of expressive possibilities, the different schools of tradition, to mention some. For a performer, the goal of developing an interpretation is the ability to perform the music to an audience of today. In that respect, the vocabulary and frequency of expressions must be accessible to the listeners. The authenticity dimension (searching for the original musical idea in the composer's mind) has to be adjusted to the balance between reliability and validity.

Analysis and interpretation have a long history of different discourses. Many musicians keep clear of analysis of any kind because they fear that analysis will reduce the potential of meaning in the interpretation process. As elsewhere in our lives, fear can be overcome by gaining more knowledge. I hope this book can help, but I also acknowledge that the amount of relevant knowledge from analysis might be a minor factor in developing an interpretation. There are, however, some possible connections, and these are mostly related to the use of concepts and terminology in the literate discourse of music. Accepting the untranslatability of music to language must be the foundation for building an understanding of the different kinds of knowledge. Accepting incommensurability does not undermine the possibility of disseminating knowledge.

In this situation, the question of the coin becomes more important. I think it is possible to see analysis and interpretation as two sides of the same coin. The two disciplines have different perspectives and contribute to various kinds of knowledge in the communicative chain of music. As such, they both have a reference to the music notation/score, which we could identify as the coin in the metaphor. However, I find it necessary to underline that the value of this coin is tied to the ontological dimension of music, whereas the essence of music is in the epistemological dimension.

During the last 20 years, a new approach has developed. Artistic research refers to research *in* the arts as a reflection and articulation of the embodied knowledge

throughout the artist's creative process. In artistic research, epistemological questions dominate: What kinds of knowledge and understanding are embodied in art practice? Moreover, how does that knowledge relate to more conventional types of academic knowledge? In Part III I will present some aspects that could answer these questions.

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PART III

ARTISTIC RESEARCH

In the discourse of science, there is a resistance against a term like 'artistic science' while we have been used to many other 'sciences'. The connection appears to be weakened gradually between the discipline and the science term, from Natural science (sometimes just called science!) via Social sciences to the Humanities (which are not always accepted as science). The research term is more applicable to Humanities and definitely more acceptable to 'artistic research'. There is an inevitable overlap between 'artistic research' and 'art-based research', 'practice-led research' and 'practice as research'. Henk Borgdorff[1] presents a distinction between three types of research related to art; Research *on* the arts is research that has art practice in the broadest sense of the word as its objects. The regulative idea applying here is that the object of research remains untouched under the inquiring gaze of the researcher. Research *for* the arts can be described as applied research in a narrow sense. The research delivers the tools and the knowledge of materials that are needed during the creative process or in the artistic product. (In music, performance studies can be included in this category.) Research *in* the arts does not assume the separation of subject and object and does not observe a distance between the researcher and the practice of art. Hence, research in the arts seeks to articulate some of this embodied knowledge throughout the creative process and in the art object. It is research *in* the arts that I will take into account now.

The performer's position between the composer and the listener requires a combination of knowledge from the analytical and the communicative perspective. The presentation of methodologies in Part II included a development from those most focused on the ontology of the musical object (H-D method) via Semiotics focusing on the special status of sign and symbols in our understanding and musical practice. The connection to the context and what the signs/symbols might express became the new dimension presented by the Hermeneutics, and this epistemological perspective ended up in a brief look at the Phenomenological perspective.

In Part III this progression is taken a step further into Artistic Research. In the last decades, there has been a growing amount of literature, articles and books analysing, defining and describing artistic research as a new paradigm in science and research. However, I will not designate artistic research as a methodology in line with those presented in Part II. There are several reasons for such a claim. I will here present the two main arguments and will return to elaborate on them and the topic in the subsequent chapters.

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[1] Borgdorff (2012) is a collection of several of his papers/articles on artistic research.

1 Artistic research is carried out in the individual artist's perspective/horizon of understanding, and is not regulated by any methods or methodologies. All the methodologies presented in Part II had a common focus on the research object and tried to reduce or regulate the influence of the individual characteristics of the researcher. (This is why methodologies presented in Part II are so effective in developing an understanding of style and genre in performing practice.)

2 Applying the artist's/musician's perspective will include a dimension of skills, habits and embodied knowledge that has to be recognised as equally valuable as literary arguments and contextual observations. A musician's store of knowledge will influence ontological and epistemological characteristics in an artistic research project. (This is the reason why artistic research is fundamental in developing a musician's identity as a performer.)

In the chapters to follow, I shall focus on three different themes: Ontology, Epistemology, and Communication. In all research, ontological questions are fundamental. In musicology, the score/written manuscripts have been taken as the primary ontological entity in music studies. The first chapter on artistic research in music had to be called "A world beyond the score". Being a human phenomenon, music can be dealt with in many ways, and it can yield knowledge on many levels. Trying to bring forward some discourses on the artist's knowledge acquisition in art processes, I chose to call the second chapter "A world of perspectives". The last chapter could be named "A world of Art", but as the art term is so closely related to objects, I have named it "A world of artistic expression". Artistic research will/should explore the expression that is communicated (taken in by the audience) and not the object (like the title or any other reference to the music).

My overall goal for Part III is to illuminate the possibility by taken the position of an artistic researcher, the musician can proceed with all his knowledge including his practitioner knowledge to develop new insights in dealing with composers, performers, and stimulate listeners to enhance their understanding and appreciation of music.

A WORLD BEYOND THE SCORE

TWO QUOTATIONS ON SCIENCE

What can we find beyond the score? Because the musical score has been the scientific object per se in musicology in its entire history as an academic discipline, I will start with two quotations relating music/art and science. In the search for ontological entities in music, I will continue with an elaboration of the representational theory trying to answer what could be of (academic) interest (accessible knowledge) beyond the score. When quoting the American anthropologist Clifford Geertz and replacing the term 'science' with 'music', the connection between science and artistic research becomes apparent:

> … if you want to understand what science (music) is, you should look in the first instance, not at the theories or its findings, and certainly not at what its apologists say about it; you should look at what the practitioners of it do.[1]

Syntactically the exchange is easy, but semantically; can 'science' and 'music' be interchangeable? The goal is to understand, which indicates human using cognitive processes, and in that respect, it should be possible. The real problem is the ontological one; do science and music have the same ontological status? Traditionally we think of music as a phenomenon based on temporal aural impressions while science is documented in permanent literary sources. However, in his advice, Geertz's excludes the theories and findings of science (the permanent literary sources) and points to what the practitioners do. His guidance emphasises the primacy of doing over abstracting and notation. In that perspective, what musicologists and theorists say about music (especially when focused on the score) do not amount to the first instance of understanding what music is. Geertz's advice is to look how the music performers make/do music. In that way, he opens up for artistic research.

Some academics compare artists and scientists more directly. According to Bryan Magee:

> The scientist and the artist, far from being engaged in opposed or incompatible activities, are both trying to extend our understanding of experience by the use of creative imagination subjected to critical control, and so both are using irrational as well as rational faculties. Both are

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[1] (Geertz, 1973, p. 5)

exploring the unknown and trying to articulate the search and its findings. Both are seekers after truth who make indispensable use of intuition.[2]

There are, however, some problems with this position. The critical control in science and art can be fundamentally different. In science, at least in natural science, verification systems are standard and transparent focusing on replication. In the humanities, a scientific discovery might be impossible to replicate, but the findings can be a point of departure for further research. In art, the replication process (like the production of books, and recordings) is not seen as a part of the artistic process, and quite often, the artist does not have control over the replication process. Magee correctly points to the use of irrational as well as rational thinking and contending that both are exploring the unknown and trying to articulate its findings. However, while the articulation of the search has been mandatory in science, it has not been so in art. Due to the blooming of artistic research during the last decades, the question of articulating the search in artistic processes has been raised. The idea that artists are seekers of truth seems old fashioned, a reminiscence of a Romantic Art Idea.[3] I doubt whether all scientists today are totally focused on searching the truth. The modern theory of science (after Popper) has dethroned truth as the prime goal in science. Verification is local (theory loaded), and falsification is more important in developing theories about the world. In the performer's perspective, there are many links between science and art, as I discussed in Part II. However, there are fundamental differences that must be taken seriously when developing a practice in artistic research that can represent an alternative acquisition of knowledge different from the traditional scientific procedures. The first challenge will be the question of ontology in music.

THE REPRESENTATIONAL THEORY

In the search for the musical work in Chapter 6, three objects were identified; the score/notation, the sounded musical work, and the discoursed musical work. Among these, the discoursed work seems to be least bound to the musical work's ontological entities. The temporality of the sounded musical work made music rather inaccessible for scientific inquiry and problematic as an object in philosophical discussions. The fact that musicology only began using recordings nearly a hundred years after Edison's invention was more a result of cultural processes than of critical thinking. In this situation, the score became the best representation of the ontological entities in the music. In spite of the voluminous literature in musicology taking the score as a point of departure, there has always been a desire to approach the idea of music as a human phenomenon. Music philosophy and aesthetics have focused on ideas and concepts in music and tried to develop discourses where the ontological entities of music were identified. The

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[2] (Magee, 1985, p. 69)
[3] John Dewey (1925/1981 p. 307) points out that "Poetic meanings, moral meanings, a large part of the goods of life are matters of richness and freedom of meanings, rather than of truth; a large part of our life is carried on in a realm of meanings to which truth and falsity as such are irrelevant."

apparently double ontological status of music, being a physical object (the score or the sounded work) and a mental imagery (the musical idea, the interpreted or experienced work), made possible numerous different theories in music based either on the score or the musical idea.

Taking the performer's perspective, we need to go beyond the score and search for processes in our brain that can shed some light on the musical phenomenon. I will start by using the representational theory as a frame to this investigation. The original or "classical" representational theory can be traced back to Thomas Hobbes and was a dominant theme in classical empiricism in general. According to this version of the theory, the mental representations were images (often called "ideas") of the objects or states of affairs represented. For modern adherents, the representational system consists rather of an internal language of thought.[4] The contents of thoughts are represented in symbolic structures (the formulas of mentalese) which, analogously to natural languages but on a much more abstract level, possess a syntax and semantics very much like those of natural languages.[5] In this way, it is possible for the human mind to imagine and conceptualise entities that have no ontological status in the outer world. This capacity allows a description of our ability to create symbols and ideas beyond perceptual impressions. Within this discourse, we can formulate theories in ethics (which actions in the world is of value to our society) and aesthetics (which objects in the world are of value to our lives). In addition, based on an impression we can foresee several possible scenarios before they happened. Nevertheless, a crucial point in the representational theory is the link between ontological entities in the world and our mental representation of them in such a way that a parallelism exists in their functionality.[6]

In the history of music, we can find a search for ontological entities in music combining the mental and worldly reality all the way from the Greek Antique to Modernism. We could call it a search for inherent or intrinsic qualities in the music. In the case of Plato, his reference to melodic elements and scales, which are ontological elements in the world, having an effect on the mentality of the soldiers, is part of his theory of ethos, which still echoes in today's discourse when debating the value of different musical genres.[7] Searching for ontological elements in the music that can be linked to a hierarchy of (ethical/aesthetical) values is a well-used strategy developing an argument. In the Middle Ages when the Church dominated the literary production of music and music theory, the question of ontological entities in music was rarely discussed. Music should be serving the Word, and that functionality was paramount. The text regulated the parallelism between the sounded music and the musical ideas.

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[4] I.e., mentalese in Philosophy is a hypothetical mental system, resembling language, in which concepts can be pictured and combined without the use of words.

[5] There is a strong resemblance here to the generative theory of music in Lerdahl and Jackendoff (1996).

[6] The weak point in this parallelism is the lack of awareness to the arbitrariness of the language. The language can describe functionality that does not exist or describe functionality in a way that covers up the real relations. How can we know what is going on?

[7] Like Black Metal versus Classical music.

This close connection with the literate dimension became an essential element in developing the musical-rhetorical figures in the instrumental music of the Baroque era. The abundant production of instrumental music, the new craftsmanship in building instruments and the turn into tonality with its potential for functional relations between harmonies, made necessary a new focus on the ontology of music in this era. The combination of Affektenlehre (Doctrine of Affections) and musical-rhetorical figures developed the tradition. The Doctrine of Affections postulated a strong relation between the sound/sonority of music and the human psyche. This rather vague scientific fundament was strengthened by the musical-rhetorical figures as they were initiated from vocal music by which the text (meaning) of the musical (ontological) entities was established. To perform the music, it became necessary to know and identify musical-rhetorical figures in the instrumental music. We could call this the initial phase of music performance as a literacy practice where in addition to skills on your instrument you also needed knowledge based on literate sources. Clearly, figures that related to bodily movements or other physical objects were much easier to identify than those referring to abstracts and literary concepts (at least for the listener).

The search for more elevated ontological entities in music became even more elevated in the era of the Enlightenment and Classicism when the concept of beauty became the primary focus. In letters to his father, Mozart's states that musical elements in his compositions have the beauty that will please both the Kenner and the Liebhaber. Such a statement could be taken as an indication of a more individualistic approach to the question of ontological entities, moving the validation of ontological entities from the composer/performer to the listener. New questions arise in the Romantic era: Is it possible to study the inherent qualities (ontological entities) in music if they are bound to the listener? Is it possible to develop knowledge about music, music experiences and in music aesthetics if all our references are personal and subjective? (This is the old conflict between subjective experience and objective knowledge; A conflict with ostensive use of these linguistic terms). Some composers and critics argued that music could and should express ideas, images, emotions, or even a completely literary plot. In 1818, Arthur Schopenhauer's *The World as Will and Representation* argued that instrumental music is the greatest art because it is uniquely capable of representing the metaphysical organisation of reality. Although the Romantic Movement accepted the thesis that instrumental music has representational capacities, very few supported Schopenhauer's strong link between music and metaphysics.

Nevertheless, the mainstream consensus endorsed music's ability to represent particular emotions and situations. In 1832, Robert Schumann stated that his piano work *Papillons* was "intended as a musical representation" of the final scene of a novel by Jean Paul, *Flegeljahre*. The thesis that the value of music is related to its representational function was vigorously countered by the formalism of Eduard Hanslick, in his *Vom Musikalisch-Schönen* (1856). A divided debate in aesthetics generated two competing groups. On one side are formalists (e.g., Hanslick), who emphasise that the rewards of music are found in appreciation of musical form or design, while on the other side are the anti-formalists, such as Richard Wagner,

who regarded musical form as a means to other artistic ends. Both sides are within the frame of a representational theory describing the mental representations of music (the ontological entities) as images (often called ideas) of the objects or states of affairs represented. The main difference was that Hanslick restricted the representations in the mind to be "Tönend bewegte Formen", while Wagner accepted extra-musical elements to be relevant as music expressions. This "subjectivization of the aesthetics" (as Hans-Georg Gadamer calls it) has led to a number of unfortunate consequences and misconceptions; like (1) the mind is disembodied, (2) thinking transcends feeling (3) feelings are not part of meaning and knowledge, (4) aesthetics concerns matters of mere subjective taste, and (5) the arts are a luxury (rather than being conditions of full human flourishing).

In the twentieth century, several new theories added nuances to traditional views. However, the performer's perspective was absent in the debate until the end of the century. According to Mark Johnson representationalism in its most general sense:

> … is the view that cognition (i.e. perceiving, conceptualising, imagining, reasoning, planning, willing) operates via internal mental "representations" (i.e. ideas, concepts, images, propositions,) that are capable of being "about" or "directed to" other representations and to states of affairs in the external world. The technical term for this "aboutness" relation is intentionality.[8]

The return of intentionality (as in Mozart's letter) is of great importance indicating the importance of the communicative element in the ontology of music. Without the communicative element, we are stuck in either the objective score or the personal experience as the only alternatives defining the ontological entities in music. On the other hand, including the intentionality entails making the distinction between ontological and epistemological elements/discourses more undetermined.[9] Simplifying Johnson's text, we could say the cognition operates via internal mental representations that are intentionally indicating other representations and states of affairs in the external world. Taking the performer's perspective we could say that in interpreting a score/sheet of music the visual impressions will not only be guiding the performative action, but the input will create mental representations that will include intentions of meaning construction and comparing these meanings with the knowledge of style (i.e. intersubjective representations and states of affairs in the external world). The intentionality makes this process a communicative process connecting the performers' (composers') ideas to the performance.

Growing evidence of the remarkable mimetic intersubjective achievements, known as our mirror-neuron system supports the representational view. This system has been proposed as a mechanism allowing an individual to understand the meaning and intention of a communicative signal evoking a representation of that signal in the perceiver's brain. Neurons with these 'mirror' properties are detected in several areas of the brain. It is usually impossible to study single neurons in the

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[8] (Johnson, 2007, p. 114)
[9] I will elaborate on this in the next paragraph.

human brain, so most evidence for mirror neurons in humans is indirect. Brain imaging experiments using functional magnetic resonance imaging (fMRI) have shown that the human inferior frontal cortex and superior parietal lobe are active when the person performs an action and also when the person sees another individual performing an action. It has been suggested that these brain regions contain mirror neurons, and they have been defined as the human mirror neuron system (MNS).[10] A large number of neuroimaging studies have shown that such a human frontoparietal mirror neuron system is engaged during action observation and imitation and that this system shows sensitivity to auditory stimuli related to actions as well as several high-level human cognitive functions such as empathy and self-other discrimination.

There is considerable support for the hypothesis that the perception of *action*, *language* and *music* recruit shared neural resources, which appear to be located in brain regions comprising the human mirror neuron system. Based on this evidence Molnar-Szakacs and Overy[11] propose that "humans may comprehend all communicative signals, whether visual or auditory, linguistic or musical, in terms of their understanding of the motor action behind that signal, and furthermore, in terms of the intention behind that motor action." Such an understanding will make possible the experiencing of the mind of the other, or as a metaphor would be (keeping the action dimension present) "walking in another's shoes". Properties of the human mirror neuron system thus allow us to consider musical communication in a new light—less regarding pitch/timbre/rhythmic patterns—and more in terms of action sequencing, goals/intentions, prediction and shared representations. As such, the discovery of the mirror neurons and a homologous system in the brain makes the brain's functioning intimately connected with the body.

There is substantial evidence that MNS seems to fit the idea of representation based on bodily actions/movements. This characteristic would indicate a possibility for musical expressions associated with movements to contribute to an ontological meaning construction in the three dimensions in space. However, abstracts (concepts, ideas, and literary elements) as in many musical-rhetorical figures in Baroque music cannot be deduced directly from the mirror neuron system; they can only contribute to meaning construction via satisfactory literacy and other competencies combining abstracts/feelings/concepts and particular musical expressions. Such competence is part of the epistemological dimension in our mind. In combination, these two paths to meaning construction can establish the musical experience (expression, topoi, style or genre.) I shall elaborate on the epistemological dimension in the following chapter.

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[10] (Iacoboni et al., 1999)
[11] See Molnar-Szakacs and Overy (2006) for complete list of references.

EMBODIED MEANING

Drawing on cognitive science and neuroscience to probe the bodily roots of meaning, concepts and language, Johnson (2007) makes the representational theory of mind highly problematic, if not downright false.[12] He characterises his alternative theory as naturalistic embodied meaning, insofar as it situates meaning within a flow of experience that cannot exist without a biological organism engaging its environment. "Meanings emerge "from the bottom up" through increasingly complex levels of organic activity; they are not constructions of a disembodied mind" (Johnson, 2007, p. 10).[13] A search for a conceptual approach to concert programmes can often give the musician an impression of the program being a construction of a disembodied mind. If we revisit Dreyfus and his description of the development of expertise, we could see a connection between the two first levels (novices and advanced beginners) and the characteristic of their music performance as musically a meaningless performance of a disembodied mind. Making the artist the researcher is to argue that the meaning is not just a matter of concepts and propositions, but also reaches down into the images, sensorimotor schemas, feelings, qualities, and emotions that constitute our meaningful encounter with the world. In what way can we combine these artist related elements with the content and context of a performance and still search for ontological elements?

As shown in the previous section, the mirror neuron system represented a possible link between an individual and his or her cultural context. The last two decades saw an explosion of scientific research into the neural basis of music, revealing those different aspects of musical processing mobilise almost all regions of the brain, unlike any other stimulus or cognitive process. The potential effects of music on neural plasticity are also well documented, as are the benefits of music as a therapeutic tool.[14] Consequently, taking the MNS as evidence for the representational theory in describing the musical experience/cognition appears too narrow-minded.

The representational theory was developed within a dualistic metaphysical view where the mind is separated from and different in kind from the body. The key is to stop treating percepts, concepts, propositions and thoughts as quasi-objects (mental entities or abstract structures) and to see them instead as patterns of experiential interaction. They are in and of the world rather than just being about the world because they are processes of experience, bodily actions. Dewey describes the connectedness of all levels of cognition via his principle of continuity, according to which "rational operations grow out of organic activities, without being identical with that from which they emerge."[15] This notion of continuity is fundamental for

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[12] (Johnson, 2007, p. 134)
[13] Substituting "meaning" with "music/performances," this quotation focus on the practitioner's knowledge in line with the quotation from Geertz in the introduction to Part III.
[14] (Overy & Molnar-Szakacs, 2009)
[15] (Dewey & Poulos, 1991, p. 26)

Dewey because it is the key to bridge the ontological and epistemological dualisms. I will revisit this in the next chapter.

Neuroscience has shown that the nervous systems exploit topological and topographic organisation, we build neural 'maps.' (Johnson 2007 p. 132): "We do not experience the maps, but rather *through them* we experience a structured world full of patterns and qualities."[16] The question is how meaning can emerge in our bodily experience (i.e. sensorimotor activity) and still be the basis for abstract thought. With a close link to neuroscience, several different theories are at stake in today's debate. They are relevant as a method of knowledge acquisition when approaching artistic research, by their firm linking of the performer and his or her knowledge. However, I will not try to sort out the most relevant theory in the 'wave of embodiment' that has been flooding through the humanities during recent decades. Instead, I will follow up Johnson's argumentation, supplied by some perspectives from other writers, and thereby link the idea of embodied meaning to the performer's perspective in developing a platform for artistic research.

Johnson (2007) and George Lakoff (2007) used the term 'image schemas' on the basic structures of sensorimotor experience by which we encounter the world that we can understand and act within. An image schema is a dynamic, recurring pattern of organism-environment interaction.[17] Humans have neural mechanisms for metaphorically extending image schemas as we perform abstract conceptualisation and reasoning. Patterns of cross-modal perception (synaesthesia) are exceptionally clear examples of how image schemas differ from being just a topographically mapped image in a neural map; they are sensorimotor patterns of experience that are instantiated in and coordinated between the neural maps. As such, the mind is an achievement, not a pre-given faculty. Another consequence is the rejection of any theory claiming that concepts are processed in brain regions completely independent of the areas devoted to sensorimotor processing. This deduction counters Kant's "ohne Interesse" attitude as well as Hanslick's refusal of including the feelings as part of the foundation for science in music (aesthetics).

In linking embodied meaning to abstract thought, Johnson and Lakoff point to one particular important structure: the conceptual metaphor.[18] They claim that systematic mappings from body-based, sensorimotor source domains onto abstract target domains define abstract concepts.[19] The principal sources of evidence for the existence of image schemas and conceptual metaphors are studies of language, although the sources are not limited strictly to linguistic research. Based on such evidence Johnson and Lakoff conclude that without conceptual metaphors, there would be no philosophy, nor any other mode of reflective understanding of our world. The consequence is that the processes of embodied meaning in the arts are

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[16] This may echo my quotation from Davidson, "We perceive the world through language, that is, through having language" (Davidson, 2005, p. 141). Johnson's description of the functionality of the maps can also be associated with the metaphor System I in Kahneman's book (Kahneman, 2012).

[17] For example, because of our particular bodily makeup, we project right and left, front and back, near and far, throughout the horizon of our perceptual interactions.

[18] (Lakoff & Johnson, 1980)

[19] The metaphorical logic of musical notation is based upon the spatial logic of physical motion.

the very same ones that make linguistic meaning possible. The obvious fact that we usually cannot put into words what we have experienced in a musical performance does not reduce the embodied meaning any less a type of meaning. Music is meaningful because it can present the flow of human experience, feeling, and thinking in concrete, embodied forms.[20] Music does not re-present anything.[21] Instead, the function of music is presentation and enactment of felt experience. Johnson concludes (p. 260) "Music is meaningful in specific ways that some language cannot be, but it shares in the general embodiment of meaning that underlies *all* forms of symbolic expressions, including gesture, body language, ritual, spoken words, visual communication, etc."

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[20] "Music sounds the way emotions feels" (Pratt, 1931, p. 191).

[21] (Langer, 1942, pp. 133-134): "But a work of art does not point us to a meaning beyond its own presence. What is expressed cannot be grasped apart from the sensuous or poetic form that expresses it. In a work of art we have direct presentation of a feeling, not a sign that points to it."

14

A WORLD OF PERSPECTIVES

INTRODUCTION

In the previous chapter, searching for ontological entities in music, we refused the traditional representational theory in favour of a description focusing on the embodied meaning. The goal is to develop an understanding of the relation between music and knowledge from the performer's perspective. In that context, it became impossible to use the representational theory as an ontological discourse. A central issue in this process was the role of mirror neuron system. The imitation function was at first taken as evidence for the representational theory, featuring ontological entities in the brain reflecting the outer world. However, it soon became apparent that, at least in music, the MNS could not explain the more abstract ideas and feelings; moreover, many more regions of the brain were active when listening and playing music. Such a variety of cognitive activities made the search for ontological entities in music rather complicated, and the representational theory could not grasp the holistic dimension of the musical experience. The discourse of embodied meaning turned away from the dualistic mind-body foundation of the representational theory and started to build a new understanding where the mind was an integrated part of the body and meaning was generated from the body. In accepting the idea of embodied meaning, we still need to develop a discourse on the notion of continuity from ontological entities to epistemological knowledge. To describe this process, several different theories have emerged. They might have some terminology in common, but coming from different disciplines and traditions, they represent an entire world of perspectives. In the following, I will present only a few perspectives and their terminology. I have chosen perspectives that provide a continuation of what I have presented earlier in this book hoping to contribute to discourse in artistic research. Consequently, this chapter will focus on epistemological processes, i.e. possible knowledge acquisition in artistic research.

A COGNITIVE APPROACH

My description of the listening process (Chapter 10) was partly influenced by Jean Piaget's biogenetic terminology. Describing the listening process in the context of organism-environment interaction, patterns of energy became stimuli for the organism. Applying Johnson's terminology, we could say that these patterns are converted within the organism to action potentials in neurons, thus initiating vast neural 'communication.' The describing of an activation pattern of neurons can be divided into three phases. Firstly, the pattern constitutes an 'affordance' of the world for us in some part of our experience. The concept 'affordance' is closely

connected to James J. Gibson and his work.[1] An affordance is a relation between an object or an environment and an organism that, through a collection of stimuli, affords the opportunity for that organism to perform an action.[2] This first phase description overlaps interestingly, to some extent, with Piaget's concept of assimilation: the incorporation of new concepts/patterns into existing schemas. That is, impressions of new concepts/patterns are (easily) assimilated into/due to existing schemas (patterns of neurons). In music, we often talk about styles we like and others that we dislike. To those we like we have an affordance, or we could say they are easily assimilated due to our amount of schemas (bodily actions/activation patterns of neurons) related to the style. In the second phase, the pattern is both a model of and a model for possible experience and action. For those we dislike, we have not yet been able to convert an activation pattern. Secondly, an activation pattern of neurons is a model of structures of recurring organism-environment coupling, and a model for possible perceptions and actions that one might experience. This description brings to mind Piaget's accommodation, the process by which existing mental structures and behaviours are modified to adapt to new experiences. In music, this happens continuously studying new repertoire. Something is recurring, but grasping the potential of the new work, you need to modify your model to develop a new interpretation. Furthermore, this entire process is loosely goal-directed and always has a built-in teleological aspect, since organisms have inherent values they are trying to realise. In this third phase, values such as maintaining homoeostasis (what Piaget called equilibrium) in their milieu, protecting themselves from harm, actualising their potentialities for growth and fulfilment (what Piaget called the adaptation process) come into play. In music, the intentional approach to becoming a musician is the fundament for any performer. These discourses of Johnson and Piaget (and Gibson) are all part of the vocabulary in cognitive psychology. As general descriptions of cognitive processes, they are relevant but not specific for the performer's perspective in artistic research.

A LINGUISTIC APPROACH

Before presenting an artistic approach, I shall gather the essence of several terminological elements used in this book into one big model. I call it a linguistic approach because all the concepts presented are abstracts and as such, their value is determined by their functionality. The arbitrary connection between symbol and referent in Ogden's triangle illustrates the difficulties of identifying ontological entities in symbolic discourses. However, in this chapter, I am searching for ways to describe knowledge acquisition (the epistemological dimension), and as long as we accept the blurry ontological status, functionality is worth trying.

In developing the performer's perspective in artistic research, it is important to be able to connect the different terms and concepts to the discourse to which they belong. I will start with the model presented in the chapter on Hermeneutics.

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[1] (Gibson, 1966)
[2] A knob affords twisting/pushing while a cord affords to pull.

Artistic research is all about interpretation, and therefore, that model is a relevant point of departure. Keeping the functionality of the triangle, I will add different layers of concepts that are often involved in discussions on artistic research. The three corners of the triangle represent the three primary elements (Person, Action, and Product). Each of them has a spectrum of (philosophical) concepts at consistent levels. In this version, we add the three philosophical fundamentals: subjectivity, objectivity, and intersubjectivity as the ultimate perspectives in research. We also extend the hierarchy of the model by adding three concepts central to this book: Skills, Performance, and Literacy. We place them on a new level 2 because they are all, to some extent, observable for other people. When choosing to use embodied meaning as a fundamental concept, it is crucial to take skills as an essential element in knowledge acquisition in artistic research. The skills represent a concept much wider than the actions in the performance, and skills are part of the 'play' between performer and audience (some performers making many gestures to underline some unique skills). The performance is obviously observable to the audience, but most people will respond as if a recording also presented a performance. The Literacy-dimension is the most indirect of these three, but at least in classical music, this dimension serves as a well-known qualification of a performer. Most classical music is performed from music notation, and the mystery of interpreting the score is part of the Product/Expression/Context that constitutes the intersubjective understanding of (classical) music.

Between the core elements, I presented characteristics of scientific explanations (intentional, operational/functional and causal). Focusing on scholarly discourses, we will add 'metaphors,' 'allegorical,' and 'synonymy' in parallel to the scientific explanations. The 'metaphor' became paramount in Johnson's texts and established the link between the Person/subject and the Action/object in his embodied theory.[3] My many 'translations' of philosophical arguments to a performer's practice are 'allegorical' in that they indicate a common functionality even if the context is different. In artistic research publications and master class teaching, there is an extensive use of metaphors and allegorical expressions. Discriminating between these two explanations is important. Metaphors refer to the relation between the sign/symbol and its meaning whereas an allegorical expression should try to establish a link between the sign/symbol and its expression/context. 'Synonyms' have not been exposed to this text, naturally because our interest is in music and artistic research where synonyms are outside our domain.[4]

As an outer circle in this model, we indicate three essential superior themes (Aesthetics, Logos, and Ethics). In discussions, they might not be expressed, but quite often, they are used to develop arguments on a lower, more concrete level. It is important, then, to remember what relation they belong. An aesthetic issue is about the connection between a person's meaning and the use of sign/symbols in

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[3] In Lakoff and Johnson (1980) they illustrated the use of metaphors in our thinking.
[4] If it could be possible to identify a single mirror neuron, we could perhaps call the name of that mirror neuron a synonym of the action presented or thought.

action (performance), not about the relation between the action and its product, and not at all about a product's relation to a person/listener (which is an ethical issue). In a performer's perspective, playing a piece of music involves all three themes, but if there is a problem, you need to know in what relation to making a qualified analysis. To act in agreement with musical style and genre, it is necessary to be conscious of all three superior themes. Traditionally, the focus has been on aesthetics, and that is of great consequence to the reliability and validity of performance. So strong has this emphasis been that the argumentation often includes the logos-dimension, the relation between the sign/symbol and the expression. Nevertheless, this approach could be called (in philosophy) a category mistake. The point of departure in an aesthetic argument would be the idea of meaning in the actual piece of music. The intentionality of the interpretation may be supported by aesthetic arguments, but the performance needs to be operationalised within a chosen system of functionality between the sign/symbol and the expression. There might be some terminological resemblance between the actual logos and aesthetics, but that resemblance would be on the linguistic level and not necessarily relevant to the performed music. This difference between aesthetics and logos in this context contributes to making room for individual interpretations presented to the intersubjective context of an audience. I would say that to foresee the logos dimension—the relation between the sign/symbol and expression in the actual style/music—is essential in developing a personal interpretation. As the logos-dimension can use different operational/functional systems, it is necessary to be aware of the multitude of operational links between sign/symbol and expression. A consequence of this argumentation is that we can see that music, like language, is an arbitrary system dependent of the intersubjective dimension of knowledge (i.e. communication is the foundation of music).
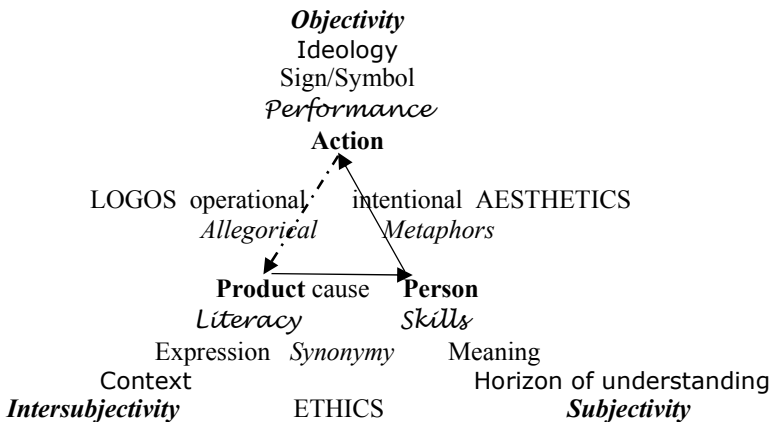
Objectivity
Ideology
Sign/Symbol
Performance
Action

LOGOS operational   intentional AESTHETICS
Allegorical   *Metaphors*

Product cause   **Person**
Literacy   *Skills*

Expression *Synonymy*   Meaning
Context   Horizon of understanding
Intersubjectivity   ETHICS   *Subjectivity*

Figure 12. Map of concepts

<center>AN ARTISTIC APPROACH</center>

Blackwell Philosophy Anthologies defines *Epistemology* as a philosophical inquiry into the nature, conditions, and extent of human knowledge.[5] I have presented several theories on the nature of human knowledge in the previous chapters, and I shall not discuss the extent of human knowledge. The conditions, however, are of particular concern for developing an artistic approach to knowledge acquisition. One problem is the conceptual and methodological frame of 'artistic research' in relation to both art and academia, two domains that have traditionally had a discourse utilising a demarcation between the two. Borgdorff (2012) refers to this debate in several of the articles in *The Conflict of the Faculties* and characterises artistic research in this way:

> Artistic research—embedded in artistic and academic contexts—is the articulation of the unreflective, non-conceptual content enclosed in aesthetic experiences, enacted in creative processes, and embodied in artistic products.[6]

The first consideration in this definition is that we find artistic research embedded in both the academic and the artistic context. Traditionally, scientific research may do well without any connection to artistic contexts. This combination cannot be universal, but on the interphase of phenomenology, cognitive sciences, and philosophy of the mind, we encounter themes and issues central to artistic research. The second condition is that artistic research is the articulation of the unreflective, non-conceptual content enclosed in artistic experiences. The 'unreflective content' might be comparable to System I in Kahneman's metaphorical description of thinking fast and slow.[7] In the description of the listening process (Chapter 10), there is a parallel to primary interpretative elements established by differentiation and that this distinction is based on our previous knowledge as a contrast to reflective awareness. For Borgdorff (and me) it is of importance to underline that the articulation of this unreflective, non-conceptual content can be included in artistic as well as academic expressions. I find it harder to accept that this articulation is enclosed in aesthetic experiences. In my world/discourse, articulation of aesthetic experiences has to be articulated i.e. enclosed in an operationalised language (Logic) and as such reduced in content (cf. the communicative chain model in Chapter 6). As I demonstrated in describing the listening process and further elaborated in the mirror neuron system, we do not think in those categories that the language sets up for us. In no way is it possible that the unreflective, non-conceptual content can be enclosed in any particular structure/hierarchy in the mind. Besides, I think it is possible, both in the artistic and academic contexts, to grasp/be aware of some unreflective, non-conceptual content in the action/sign – product/expression dimension. That kind of knowledge

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[5] (Sosa, 2008)
[6] (Borgdorff, 2012, p. 149)
[7] (Kahneman, 2012)

would be the core element in what we called the Practitioner's Knowledge (cf. Chapter 1 and Introduction to Part III).

The third condition, that artistic research is enacted in creative processes, is entirely unproblematic. The fourth condition, articulation is embodied in artistic products, is more complicated. It is in line with Borgdorff's argumentation to ensure that the artistic research keeps its relation to the production of artistic products. However, I find it difficult to accept as a general feature that artistic research is embodied in artistic products. Too many artistic products lack any reference to artistic research. Secondly, I look at artistic research as a cognitive activity, and as such, the embodiment is related to cognitive processes of the performer/researcher, not to artistic (physical) products.

The theme of unreflective action, non-conceptual content and embodied knowledge is explored in phenomenology beyond an ontology in which the world was thought to be independent of our situatedness. Our bodily constitution and situatedness in the world make us capable of getting a grip on reality as we observe, learn, and act, and of 'acting in flow' before any reflection.[8] Combined with cognitive sciences and philosophy of mind this will open for liberating the content of research in and through artistic practices. That content encompasses more than just the tacit knowledge embodied in the skilfulness of artistic work. The goal is that artistic research can impart and evoke fundamental ideas and perspectives that disclose the world for us and render that world into what it is or can be. This articulation is what Borgdorff calls the realism of artistic research. Two perspectives, constructivism and hermeneutic, can be adopted in artistic research. The constructivist perspective holds that the objects and events become constituted in and through artworks and artistic actions. Performances do not represent things; they present them and thereby contribute to making the world into what it is or could be. The hermeneutic perspective assumes that artistic practices and artworks disclose the world to us. These two perspectives are not in opposition to each other, they are complementary in the epistemological processes, but it is worth differentiating them in artistic research. The constructivist perspective is closer to the thickening process developing an interpretation while the hermeneutic perspective is closer to the contextualization of artistic experience in articulating artistic research.

The literature on artistic research has flourished in the last decades, often using 'the artist' as a point of departure in describing methodological, ontological and epistemological issues.[9] In music, at least in the tradition of classical music, we have a unique situation making the study object more complicated. Focusing on the artist, we have two contributors in performing classical music: the composer, and the performer. To many methodological, ontological and epistemological questions, this represents a challenge. In this book, I have tried to take the music performer's perspective. One emerging theory is that the literacy dimension is much more apparent in performing classical music than in other artistic

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[8] This phenomenological description overlap with Kahneman's description of System I.
[9] Borgdorff (2012) refers to policy documents as well as the literature on artistic research.

productions. Another is the focus on skills and as a consequence, thereby, the embodiment of knowledge. The development of interpretation (the thickening process from the score to the idea of interpretation) will be a major issue in artistic research studying musicians. A parallel process for the composer would be harder to explore, as there usually is no concrete material to set off the process. However, the process of writing down the musical ideas and composing a musical work would be relevant to artistic research. In the performer's perspective, the process of making an idea of interpretation sounding involves the practitioner's knowledge; this is of particular interest doing artistic research with the performer's perspective. In music, regardless of choices of style and genre, performance is created within a tradition. The tradition is an actual amount of knowledge. The practitioner's knowledge makes it possible to distinguish a performance from other events through the artistic expression of identity. This identity is a result of the musician's store of knowledge, i.e. his/her epistemological potential. Identity in artistic expressions affects the relation to tradition and gives opportunities for innovation. To perform an artistic work makes the identity question a double one; presenting the work with expressions in line with the creator's intended identity, or presenting the performer's interpretation based on the performer's practitioner knowledge. The ability to transform and use skills, tacit knowledge, literacy components, ideological and aesthetical principles, will all influence the performance. However, included in the practitioner's knowledge is also an experience of the performing condition. The venue, acoustics, audience, program idea, all represent impressions that will give feedback during a performance. The challenge to the performer is to put his/her knowledge of the context and the product's expressions into the melting pot of his/her horizon of understanding, giving the product/performance an identity and making it meaningful to the audience. A crucial element will be the musician's ability to develop and deliver a valid and reliable interpretation communicated to the audience.

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A WORLD OF ARTISTIC EXPRESSIONS

INTRODUCTION

The challenges in artistic research as in all sciences are often divided into three elements: ontological (what is the nature of the object), epistemological (what kind of knowledge does it hold) and methodological (what are the working methods in knowledge acquisition). I have tried to deal with the ontological and epistemological dimension present in the text, and Part II focused on the diversity of methods applicable in the performer's perspective. In my mind, the challenge to artistic research is not necessarily to develop a particular methodology; there are enough methods already. However, the uniqueness of artistic research is the combination of researcher, artist and artistic expression in one person's performance. In such a combination, the communicative dimension, understanding how and on what conditions artistic expressions can be communicated, should be the focus of artistic research. In the performer's perspective, the goal of performance is to present artistic expressions that can communicate with the audience/listeners. Cultural studies yield knowledge about conditions related to the social context of performance. That kind of knowledge is important for the performer in planning and preparing a performance. Nevertheless, the way that the practitioner's knowledge is active in the performance is a different matter. In this chapter, I will elaborate on the some of the characteristics of practitioner's knowledge, go on to present some possibilities of meaning construction from artistic expressions, and finally conclude on music as communication.

THE PRACTITIONER'S KNOWLEDGE

It is possible to regard a musical work as an objective entity, an accumulation of actions and signs within an ideology to manifest in a product of expression in a given context. Many performers and common in teaching situations use such an approach. This perspective permits analysis of the work without solely a reference to the originator/composer's intentions, in line with Roland Barthes (1915-1980) and his theories about the reader constructing the text.[1] In classical music, this is the most common context in rehearsing a piece of music. The references to the historical background of the work will implicitly use the terminologies of style and genre and thereby by that give some hints about the composer's intentions or how to interpret the music/score. However, the actual entity we should focus on in performance is musical expressions, and that involves the performer's capacity to

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[1] (Barthes & Heath, 1977, pp. 142-148)

create symbols and signs in his/her performance. In this way, the embodied knowledge, skills and horizon of understanding, all of the importance of the epistemological process, will support the ontological perspective of the musical work as an objective entity. In the performer's perspective, the challenge is to see what connections exist between sign/symbol and ideology (in classical music; the theory of music and its history, styles and genres) and the expression the sign/symbol can manifest in a performance today. These connections would be the operationalization of the given objective sign/symbol in an intersubjective context (i.e. the audience at the venue of the performance). The artistic expression's functionality is dependent on references to some accepted musical gestures and topoi for communicating with the public. Without any such references, there are no possibilities of meaning construction. Music has no denotative power (only some onomatopoetically features), it is all based on connotations; the listener's meaning construction. Being symbolic, the artistic expressions in music can only give meaning when it is possible to relate new impressions to existing references.

My comments on the communication model presented in Chapter 9 elaborated on the necessity of reflecting upon the difference between sign and expression, between the sign as an element in the object and understanding, and expression as an element in the intersubjective context of understanding. The performer, using his/her practitioner knowledge, must be able to include both perspectives in constructing (building up) the interpretation (thickening the score), and in the performance, be able to react to the responses from the intersubjective context of venue and audience. This intersubjective context forms the basis for the establishment of code recognition, interpretative communities and the idea of good taste. The knowledge of the actual intersubjective context is part of the practitioner knowledge, and will always include some non-conceptual, non-propositional knowledge in addition to the propositional knowledge in cultural and historical studies like HIP.[2] The practitioner's knowledge will furthermore include the performer's evaluation of the possibilities of fulfilling the intended interpretation given the performer's skills, the condition of the instrument, venue and fellow musicians. This knowledge is part of the thinning process by the performer in the communicative chain model. In everyday life, this evaluation represents the melting pot of knowledge in performing classical music and being at the core of practitioner knowledge it is an important aspect of artistic research.

Knowledge as a concept relates to 'justified true belief' or the term 'epistemic justification' used in philosophical discourses. Referring to the practitioner's knowledge the scientist/philosopher would ask: "Under what general conditions are one epistemically justified in believing a proposition?" There is one weakness/shortcoming in this question; the uniqueness of practitioner knowledge is that the knowledge need not necessarily be propositional. In the first place, this raises the issue of whether practitioner knowledge is episteme (based on reasoning) or doxa/assumption (based on sensations). All episteme can be propositional, but

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[2] More about this non-conceptual knowledge in the next paragraph.

not all doxa are linguistic. Therefore, I will present some views on the justification of doxatic attitudes from Sosa.[3] Whether a performer's doxatic attitude towards his/her performance is justified is determined by the attitude's possible fit to the performer's evidence, the evidence being the response from the audience. That kind of evidence includes experiential as well as doxatic evidence, making the truth/knowledge rather relative/intersubjective and conditioned by the cultural context. This view raises the justification of seeking egocentric rationality if it provides no guarantee of truth or even objective probability of truth? The answer is that we believe by our best lights that it is effective to pursue our goal of having accurate and comprehensive beliefs by being egocentrically rational. Supporters of the externalist theories deny this kind of internalist theses. In the externalist theory of justification, belief is justified but only if it is produced by a reliable belief-forming process. Wishful beliefs and hasty judgements lack justification because they are products of unreliable ways of believing.

Going back to the practitioner knowledge, the main problem seems to be that the performer using the practitioner knowledge during a performance, combines episteme and doxa. Nevertheless, this combination is the core of the practitioner knowledge and should be central to artistic research. In the search for knowledge that fits the performance, the musician will be open to any knowledge (both episteme and doxa) and the response from the audience will have an impact of the justification of the means used in the performance. The danger of this approach is ending up in egocentric rationality. Most musicians have experienced a teacher/master being egocentrically rational and arguing in a propositional or metaphorical language about elements in the interpretation of music in a way that was to be useful for pursuing the goal. Understanding the instruction required accepting the master's understanding of the work. The externalist view makes the question of justification of a belief a matter that relies on the process of communication. As such, it applies to a description of the hierarchy of interpretations in comparing different musicians' performances. Pointing to wishful beliefs and hasty judgements (not unfamiliar in practising a piece of music) the externalist theories underline the need for reliability, but says little about the other dimension always present in the performer's perspective, namely the validity of the performance.

ARTISTIC EXPRESSIONS

An expression (ex-pression) is an external event we take in as an impression and that we compare to an existing horizon of understanding. To be expressive, the impression must contain more information/knowledge than a comparable impression. In Chapter 10, I wrote that establishing the primary interpretative elements becomes the fundamental source of knowledge (for both performer and listener). These interpretative elements developed by differentiation can be non-

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[3] (Sosa, 2008). Part V Theories of Epistemic Justification.

conceptual as long as they are differentiable. This differentiation is based on our previous knowledge and is a result of cognitive automaticity (as a contrast to the more reflective awareness). As such, this process is fundamental also for identifying an impression as artistic expressions, yet the identification might be non-conceptual. Derrida's idea of différance was that "différance should function not as a concept, not a word whose meaning should be finally 'booked into the present', but as one set of marks in a signifying chain which exceeds and disturbs the classical economy of language and representation."[4] We can thus identify an impression as an artistic expression in music without any identifiable property (ontological element) in our awareness towards the aural sound. In the performer's perspective, the interpretative elements represent a set of marks in a signifying chain that exceeds and disturbs the tight bonds between language and representation. Artistic expressions might, therefore, bring new perspectives to already existing knowledge and challenge the propositional knowledge.

In an artistic expression, the set of marks (aural elements in the performance) can be distinguished from other objectivations by its intention to serve as a pointer to or indicator of meanings. All musical signs are explicitly intentional and formed with the purpose of referring to something meaningful beyond the actual acoustical soundscape. It is important to remember that not all elements in a performance are necessarily part of the same meaning construction. Listeners seldom completely agree on details in the performance, even if their overall judgement is congruent. However combined and compared to the multitude of cognitive processes, the possibility of establishing meaning-bearing signs in music arises among differentiated elements. The processes of meaning construction have different paths for a musician and a listener. (I elaborated the listener's path in Chapter 10).

In a musician's meaning construction the practitioner knowledge will influence the decision process on several levels. The performer's skills and his/her evaluation of them will be a mental grid of embodied knowledge regulating the set of marks to use as possible interpretative elements. The performer's belief/meaning will influence the potential of the intentional act (the sign/symbols used) in playing. If the performer does not intend that particular musical expression or believe in it, the listener will have a long way to go to thickening the sounds towards a musical meaning. The horizon of understanding will integrate the ideological and context elements in the performance; features that can be decisive for which creative solutions to use during the performance. A too narrow idea of the actual style or genre (too literate conception of the music/score) can make the interpretation of the piece rather annoying. The physical conditions of the instrument, conditions of the performer's body, and the venue will also have an impact on the performance of the interpretation. And lastly, the reaction from the audience during a performance will influence the performer's decisions in a way that has no parallel to the listener's meaning construction.

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[4] (Norris, 1987)

The observable exchange of meaning construction elements between performer and audience vary enormously between performers and music genres. Traditionally the ideal classical performers were to be moderators of the great classical tradition, the great composers, and their eternal works, limiting the performer's identity as much as possible and thereby reducing the possibilities of personal communication with the audience. In other genres like pop/rock, the situation was the opposite, focusing on the contact and dialogue with the audience as the principal evaluation of a performance's reliability and validity. Today, when the classical music is a part of a commercialised marked, the performer's ability to establish contact with the audience, giving them unique artistic expressions, is of vital importance for placing the performer in the hierarchy of performers.

MUSIC AS COMMUNICATION

In the Postlude of his book Musicking, Christopher Small (1927-2011) reminds us: First came performance, whether we speak historically (the musical history of the human race), ontogenetically (musicking in the life of the individual human being) or aesthetically.[5] The aesthetic dimension is what I would call conceptualising the symbolic potential of musical expressions. In artistic research, the primacy of performance in music (especially the practitioner's knowledge) becomes an important point of departure for seeking knowledge acquisition in music. However, the communicative potential in music seems also to be a part of the universal/genetic constitution of the human race. Music is performed and appreciated in all human cultures, and the appreciation is not restricted to your cultural expressions. This apparently borderless acceptance of musical expressions as potential for meaning construction (aesthetic experiences) is a challenge to some theories in philosophy (is there a universal essence in music) and cognition (is there a generative element in all music). How can musical expressions, that is the symbolic/ideological content, be transferred via the sonic objects from the performer to the listener, from one subject to another subject?

Molnar-Szakacs & Overy have proposed that in its ability to integrate and represent cross-modal information, the human mirror neuron system may provide a domain-general neural mechanism for processing combinatorial rules common to language, action, and music, which in turn can communicate meaning and human affect.[6] They propose that the human MNS seems the ideal starting point for a model that aims to explain musical sound as a communicative stimulus. In a concert situation, the MNS is active due to its functional situation at the confluence of sensory information, top-down cognitive control, affective information and motor output. In a more recent article,[7] they presented a model with the telling acronym SAME (Shared Affective Motion Experience) in this way:

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[5] (Small, 1998)
[6] (Molnar-Szakacs & Overy, 2006)
[7] (Overy & Molnar-Szakacs, 2009)

The Shared Affective Motion Experience (SAME) model suggests that musical sound is perceived not only in terms of the auditory signal but also regarding the intentional, hierarchically organised sequences of expressive motor acts behind the signal. Within a neural network involving the temporal cortex, the frontoparietal MNS, and the limbic system, auditory features of a musical signal are processed primarily in the superior temporal gyrus and are combined with structural features of the expressive *motion* information within the MNS. The anterior insula forms a neural conduit between the MNS and the limbic system (Carr et al., 2003),[8] allowing incoming information to be evaluated in relation to the perceiver's autonomic and emotional state, thus leading to a complex *affective* or emotional response to the music (Molnar-Szakacs & Overy, 2006). The recruitment of these neural systems in both the agent and the listener allows for a *shared affective motion experience* (SAME). Thus, the expressive dynamics of heard sound gestures can be interpreted in terms of the expressive dynamics of personal vocal and physical gestures.[9]

Each element of the model is discussed, accredited, and supported by an extensive list of scientific articles. This includes the theory of shared representations during perception of emotional stimuli, the hierarchical organisation of motor control, neuroimaging studies, the role of synchronisation and the fact that music can convey a sense of agency – a sense of the presence of another person, their actions, and their affective state. The authors conclude: "The fact that shared music-making has power to engage neural systems supporting such strong social drives and shared, affective processes, has tremendous implications for musical communication in therapy and education."[10]

The strength of this model is its radical acceptance of knowledge as embodied entities. Thereby it sets aside the dualistic mind-body complex and can develop a discourse more dedicated to artistic processes in performances. In the early stages of mirror neuron system theories, the link between an action and seeing someone else doing the action was described as a possible explanation of meaning transfer between two people.[11] It soon became necessary to broaden the scope to say something about music, as neuroimaging showed activity in several parts of the brain, not restricted to areas with mirror neurons. In the SAME model, the conduit between the MNS and the limbic system allows incoming information to be evaluated in relation to the perceiver's autonomic and emotional state, thus leading to a complex *affective* or emotional response to the music. Then musical experiences in a listener's mind are not restricted to their experiences as a performer; the listener uses the horizon of understanding and embodied knowledge in establishing the emotional response to the music.

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[8] (Carr, Iacoboni, Dubeau, Mazziotta, & Lenzi, 2003)
[9] (Overy & Molnar-Szakacs, 2009)
[10] (Overy & Molnar-Szakacs, 2009, p. 495)
[11] The utmost consequence of some articles from the early stages of this research could be taken as a support to the tabula rasa doctrine.

The weakness of the SAME model is that it only opens up for (allows) for shared affective motion experience based on the recruiting of these neural systems in both the agent and the listener; it does not say anything about the conditions of the content of such sharing. Compared to my model of communication we lack the intersubjective dimension exemplified by the difference between sign/symbol (used by the performer) and the expression (experienced by the listener). The cultural context creating acceptable operationalisations of sign/symbols into an artistic expression are not only a matter of cognitive processes but involves the hermeneutic construction of meaning in a cultural context. Verbal discourses about music and music making play an important part as adjuncts to the musical experience. Talking about music and comparing musical experiences is not only an inexhaustible source of conversational and literary topics but can enrich the relationships that taking part in performances has helped create. What differentiates musical action from other types of action is the way these actions communicate.

According to Niklas Luhmann (1927-1998), communication is constituted by the unity of three selections: 'information'—'utterance'—'understanding'. Luhmann explains:

> Communication succeeds and is experienced as successful when three selections (information/utterance/understanding) form a unity to which further communication can connect. Participation in this occurrence— whether as a source of information, as an utterer, or as someone who understands the utterance in relation to information—is the basis of all socialization.[12]

In Luhmann's theory, information is not restricted to propositions, to linguistic utterances, as in most theories of communication. A "bit" of information is defined as a difference that makes a difference.[13] While our perception is ready to scan a familiar world for information without requiring a particular decision on our part to do so, works of art, by contrast, employ perceptions exclusively for the purpose of letting the observer participate in the communication of the invented artistic expressions. From the perspective of consciousness, perception frames all communication. The distinction between perception and communication opens up for aesthetics as an academic discipline. Luhmann has an interesting critique of the traditional aesthetic in Art as a Social System:

> After all, aesthetics was founded upon another distinction, one more closely related the idea of the subject: the distinction between *aisthea* and *noeta*, sensuous and rational cognition, or aesthetics and logic. Cognition (not communication) served as the master concept, and a great deal of cognitive activity was believed to be going on in the realm of sensuous cognition. So

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[12] (Luhmann, 1995, p. 243)
[13] Luhmann uses the same concept of information as Bateson in his Steps to an Ecology of Mind (Bateson, 1972) and with an interesting affiliation to Derrida's différance.

long as the doctrine of the beautiful was called aesthetics, the distinction between perception and communication could not come into view.[14]

Within the doctrine of the beautiful, there is a multitude of possibilities playing with forms and artistic expressions, but once music differentiates itself along the lines of a system-specific (stylistic) play with forms, the situation changes. Then the social relationship between the artist and the audience becomes more problematic, provoking debates on the social status of an expert culture of connoisseurs and art critics initiated in the eighteenth century and still present. However, this debate leads not only to the realisation that conversing *about* art is different from conversing about other subjects, but also the possibility of communication *through* art, and as such the distinction between perception and communication is relevant to artistic research. Music intensifies the awareness of communication as our consciousness becomes aware of being directed and captivated by communication, experiencing the discrepancy between an external control and our unlimited operative possibilities. "The self-awareness induced by art is always the experience of a difference."[15]

Luhmann's project is to rewrite the theory of society. To do so requires a shift at the structural level, from stratification to functional differentiating. "Communication can no longer be understood as a "transmission" of information from an (operatively closed) living being or conscious system to any other such system."[16] Communication emerges only if the difference between information and utterance is observed, expected, understood, and used as the basis for connecting with further behaviour. What Luhmann underlines here is a receiver's perspective. When I write about the difference between signal/symbol and expression, it is primarily in the performer's perspective. Signal/symbol will be the information and the expression the utterance in the receiver's perspective. Communication is a self-determining process and whatever is established as communication is established by communication. Vagueness, incompletion, ambiguity, irony and so forth are part of the realm of communication and can place indeterminacies in ways that secure an individual usage. Such deliberate indeterminacies (like the musical expectations) play a significant role, particularly in artistically mediated communication. This is especially relevant in classical music where we are confronted with the hopelessly unendingly interpretability of "finished" works. It is important to remember that the distinction between determinacy and indeterminacy is an internal variable of the communication system and not a quality of the external work. In the performer's perspective, uncovering the ontological entities (the quality of the external work) is only the first part of the process of developing performances. The communicative elements have to be integrated into the interpretation to make the performance reliable and valid.

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[14] (Luhmann, 2000, p. 15)
[15] (Luhmann, 2000, p. 21)
[16] (Luhmann, 2000, p. 9)

To answer the old question how aesthetic communication achieves its goal Luhmann goes a step further: "Communication is made possible, so to speak, from behind, contrary to the temporal course of the process."[17] Making communication ultimately perfected in the addressee, tolerate 'understanding' to construe a communicative event where there was none intended, or intended as an entirely different thing. The listener might and could decide to experience any sound aesthetically in the way he/she experiences it as music. However, this freedom is usually restricted to the intersubjective social/cultural systems founded in the difference between actuality and potentiality. Actuality presented by the performer, and potentiality experienced by the listener/receiver. Wolfgang Fuhrmann, in his presentation of Luhmann's theory, concludes rather bluntly: "Without listeners, there is no music."[18]

What is music? This question has been underlying all chapters in this book. In a search for hints to an answer, I presented ontological and epistemological discourses adjusted to a performer's perspective and often exemplified in music practice. The musician as a researcher in artistic research challenged many traditional concepts and made the practitioner knowledge an essential element in knowledge acquisition in music. I have previously presented and compared several cognitive perspectives of meaning construction and in comparison; Luhmann's theories are more concerned about the conditions of content transmission. These conditions are neither the subject (person/meaning) nor the object (action/sign/symbol) but the intersubjective construction of expression/context. His theories elaborate music as communication without a need for ontological identifications and with a focus on the epistemological dimension's affiliation to the social context. In a world of artistic expressions, both the process of meaning construction and the conditions of its content are of importance in artistic research. Therefore, I will end this paragraph playing with the headline and conclude: *in a world of artistic expressions, music is communication*.

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[17] (Luhmann, 1995, p. 143)
[18] (Fuhrmann, 2011, p. 147)

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