The informed performer : towards a bio-culturally informed performers' practice

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Chapter 2: The performer's voice – references in the 20th and 21st centuries

In this chapter, the focus is on the presence and operational semantics of 'information' in the discourse of musicians. A systematic enquiry therein is quasi-uncharted territory; therefore, there are inherent limits to the breadth, depth and organisation of the exploratory analysis that is presented below. The study is confined to the 20th and 21st centuries and focuses on three information patches which shed a differentiated light on the practical and semantic use of 'information' in musical performance.

A first patch relates to a performance mode heralded at the beginning of the twentieth century by pioneers of the historical performance movement. Their interest in understanding and reconstructing music of the past by consulting historical sources gave rise to a new performance style that, by explicitly implicating 'information' in the concept of 'Historically Informed Performance' [HIP] (Butt, 2002), makes this field particularly relevant and indicative for our enquiry.

A second terrain is less known and concerns the framework of a scientific[38] approach to musical performance, the first published records of which can be seen to have emerged at the turn of the 20th century (Jaëll, 1899; Breithaupt, 1905/1921; Steinhausen, 1905; Ortmann, 1929). This avenue of exploration that will be further referred to as the project of a 'Scientifically Informed Performers' Practice' [SIPP][39] aimed at clarifying the more technical and instrument-directed aspects of music performance[40] and called in extra-disciplinary scientific information (anatomy, physiology, physics) to shift musicians' (primarily pianists') attitudes from an intuitive plane, based on personal experience, onto a more positivistic and scientific one, based on universal laws. Whereas the Early Music Movement succeeded in surviving a century of criticisms and evolutions, the scientific approach to musical performance has quasi-vanished from musicians' radars nowadays.[41] In our analysis, we will look for indications that point to a correlation between the differential impact and the respective approach to information in both fields.

[38] 'Scientific' refers here to the explicit aim to inform instrumental technique with universal or experimentally validated laws.

[39] 'SIPP' will be used for internal reference only, it is not a received acronym in formal or informal discourse but in our view adequately summarizes the perspective of a group of authors. 'SIP', with the P of performance, would imply that the efforts were foremost directed at the sounding-effects on stage; since the focus is more on teaching and learning as part of a performers' practice, the first P stands for 'performers' and an extra P for 'practice' is added to the acronym to indicate the extension of the target domain. We will come back in our conclusions on PART I to the difference between information that has an immediate impact on performances and information that impacts on the practice of performers as an intermediary entity.

[40] Otto Ortmann considers it as "a sound physiological basis for the mechanics of piano technique" (Ortmann, 1929, p. xxxiv).

[41] The sources are hardly referenced to in the daily discourse of musicians; most of the source material has not been re-edited (some of them are now available at *Forgotten Books*, a London-based book publisher specializing in the restoration of old books); SIPP is not institutionally embedded in conservatory departments.

Finally, and in addition to the two foregoing, rather specialised languages, the role and use of information in four 'Main Stream Performance' [MSP] texts will be examined with a view to connect with elements of a non-specialist, standard-view of information and to establish a benchmark-reference.

The three domains of interest mentioned above are different in their representation qua texts and context; the methodological approach applied to explore these three patches varies accordingly. Considering HIP's century-long development and engagement with specifically attuned vocabulary[42], HIP is analysed in a mini-anthology-like manner by presenting a cursory and chronological trajectory of the term information in text-fragments from seminal publications pertaining to the canon of HIP. In the corpus of primary sources related to SIPP the notion of 'information' is only implicitly present; instead of a term-bound and chronological approach, our investigation is therefore based on a more general assessment of the field by revisiting the main tenets, concerns, strengths and weaknesses of SIPP from an informational perspective and by having a closer look at three SIPP-texts. Finally, the informational attitudes in MSP are analysed by presenting source-texts that can be assumed to be part of every 21st century pianist's personal library.

2.1 'Historically Informed Performance' [HIP]

2.1.1 Situating HIP

The coexistence of alternative performance and interpretation styles is considered to be an important and defining feature of 20th and 21st century musical life; it constitutes the implicit background against which performers acquire their own specific or hybrid signatures.[43] The introduction of 'interpretation' as a mediator between performer and historical composition is often referred to as the causal factor leading to this particular state of affairs.[44] In a framework where a first distinction is made between hermeneutic and performative interpretation[45], musicologist Hermann Danuser (Danuser, 1996) differentiates within the latter category three modes of interpretation: a *Historischen-rekonstruktiver*

[42] In Chapter 1, we have already mentioned a few alternatives for 'historically informed', such as 'historically aware', 'historically minded', 'historically-oriented, 'historically inspired', 'historically-alert'. In reviewing the meaning of 'authenticity' in the early music movement, musicologist Dorrotya Fabian has established that the term underwent both historical as well as geographical evolutions (Fabian, 2001, 2003).

[43] Musicologist Jürgen Stenzl notes that "when a new interpretative approach emerges, both the old and the new approach briefly overlap before the new approach then displaces the earlier one… this was still the case during the 1920s. It is a unique feature of recent times that now different interpretations can compete in a single market for recordings" (Stenzl, 1995, p. 686).

[44] "[T]he opportunity to 'interpret' written and composed music arose only relatively late – in the 19th century; in the 20th century it became a necessity" "*Erst vergleichsweise spät – im 19. Jh. – ergab sich die Möglichkeit, noch später – im 20. Jh. – die Notwendigkeit einer 'Interpretation' der notierten Musik."* (Danuser, 1996, p. 1053)

[45] See also the chapter 'performative versus critical interpretation' in Levinson (1996) for a comparable classification.

Modus, a *Traditioneller Modus* and a *Aktualisierender Modus*[46]*.* The temporal horizon[47] is the crucial factor in Danuser's classification: musical interpretation can be guided by practices that connect to the time of creation, to a practice between the creation of the work and the current time ('*Wirkungsgeschichte*'), or to an actual state of affairs. The concept of 'Historically Informed Performance' is to be situated within a *Historischen-rekonstruktiver Modus* which aims at safeguarding historical music against the effects of time. Whereas initially 'period performance' and 'authenticity' emerged as key words in the conceptual representation of the movement, gradually the notion of 'informed performances' gained currency as a more flexible approach to the practice of integrating historical information with captivating performances. A full history of how this transition came to pass is yet to be written.[48] It is not our aim to revisit and disentangle the early music and authenticity debate but some key insights are relevant as a prelude to a more focused approach.

It is generally asserted that HIP's evolution started off with a very strict and dogmatic ideology to evolve gradually into a more pragmatic and lenient one. Such is indicated by the evolution from 'authentic' to (merely) 'informed' performances. Musicologist Dorottya Fabian (2003), however, has convincingly demonstrated that not the musicians themselves but rather the commercial propaganda surrounding them played a crucial role in promoting the value of new 'evidence':

> Musicians from Dolmetsch and Landowska to Harnoncourt or from Dart and Donington to Leonhardt kept repeating that their focus of interest was to recreate works of art for the present, and in as musically effective a manner as possible. For them the 'spirit' of the work was more important than the historical context. (Fabian, 2003, p. 26)

Generally, three main focus areas and sources of information are involved in support of this interpretative mode: 1/ the use of critically edited texts (or manuscripts); 2/ the investigation of historical performance practices (which refers to the features of the music that conventional musical notation leaves out); and 3/ the re-introduction of historical instruments by means of which all this notated and un-notated music was transformed into sound (Kerman, 1985, p. 187). Fabian provides

[46] Alternative taxonomies and critiques are also available in the 20th and 21st century: Jürgen Stenzl distinguishes between *espressivo*, *neo-objective* and *restorative* interpretations (Stenzl, 1995). Bruce Haynes discerns three 'broad currents' or 'general types' specifically in relation to the performance of music from the Rhetorical period (music until about 1800): *Period style*, *Romantic Style* and *Modern style* (Haynes, 2007, p. 32). A break with traditional interpretative strategies based on sacred scores is promoted by Laurence Dreyfus in 'beyond interpretation' where he favours a more *experiential and intuitive notions* of making music: "musicians are not only biblical scholars pouring over dead manuscripts in the library so as to extract the divine spark" (Dreyfus, 2007). Paulo de Assis in a recent research programme explores the potential of an *experimental approach* as a viable, contemporary alternative for traditional score-based interpretation: "By clinging to an outmoded paradigm of interpretation, musical performance practices are becoming isolated from the wider fields of artistic research" (de Assis, n.d.).

[47] See Gadamer's hermeneutics and notions of *Wirkungsgeschichte*, *Horizont* and *Horizontverschmelzung* (Gadamer, 2007).

[48] Fabian provides a useful overview limited to the evolution of 'authenticity' in Bach performance (Fabian, 2003).

clear indications for a differentiation between a pragmatic/practical English approach and a theoretical/observational continental approach and relates these divergences to a different focus on the type of information source: while the musical establishment on the continent focused on scores and historical context (theoretical, observational attitude), British scholarship gradually shifted attention towards the restauration of performance practices (practical approach) (Fabian, 2003, p. 26). Finally, Fabian identifies experimental and ground-breaking groups of performers on the continent who explored the repertoire "largely independently from published research, focusing on performance style and on the playing techniques of period instruments" (Fabian, 2003, p. 26). It seems then that, at least in HIP, it is possible to discern a systemic correlation between information source and processing mode: 1/ coded (score) and contextual information gives rise to a theoretical mode of information processing (information as evidence); 2/ textual information about performance practice requires practical application and assessment; and 3/ exploring and playing new/old instruments can be coupled to a process of experimentation.

2.1.2 An exploratory discourse-analysis

With the elements above as a first orientation, we can now zoom in on information's semantic spectrum within the field of HIP. What follows is an investigation on the prevalence of 'information' in a chronologically ordered collection of text fragments that pertain to the HIP-canon starting with Dolmetsch (1915) and concluding with Kuijken (2013).[49] Following up on the insights developed in Chapter 1, reference will be made to the relation between information and concepts that pertain to the sphere of imagination such as freedom, interpretation, inspiration, and creativity.

2.1.2.1 The Interpretation of the Music of the XVIIth and XVIIIth Centuries Revealed by Contemporary Evidence (Dolmetsch, 1915)

With the title of his book, musician and instrument maker Arnold Dolmetsch (1858-1940) indicates a strong positivist and evidence-based stance towards musical practice by pointing to "revelation by evidence" as a ground for interpretation. Revelation is a quasi-religious notion but Dolmetsch's title counts as an invitation to reorient the epistemic horizons of musicians: interpretation is not a matter of divine inspiration or personal intuition but is based on contemporary[50] and factual evidence drawn from historical sources. The presence of 'interpretation' in the title validates Danuser's analysis with regard to the crucial role of musical hermeneutics in the 20th century.

[49] A chronological structure is applied for reasons of overview and inclusiveness and to capture the differential perspectives between early, pioneering performers and their successors.

[50] The use of the term 'contemporary' can be called in support for considering HIP as a modernist project rather than an 'authentic', historical one (see for instance Taruskin, 1988).

Querying 'information' throughout the publication results in 29 hits, indicating that Dolmetsch is familiar with the term already in the pioneering stages of the Early Music movement. A closer look at the context in which 'information' is used exposes strong links between 'information', 'reliability', 'what to do' and 'clarity'.

> Reliable information is to be found only in those books of instruction which the old musicians wrote about their own art. (Dolmetsch, 1915, p. vi)

> Frescobaldi, in the third paragraph of the Preface quoted at page 4, says: — 'The beginnings of the Toccata should be played adagio and arpeggiando; the same applies to the syncopations and discords, even in the middle of the pieces. The chords should be broken with both hands so that the instrument may not be left empty; this battery can be repeated at pleasure.' This clearly tells us what to do, but not how to do it. Plenty of information is, however, available from other sources, and it is hoped the sequence will make everything clear. (Dolmetsch, 1915, p. 278)

From the last fragment, a belief into the accumulation of knowledge can be inferred, which, at least in Dolmetsch's view, eventually completes the puzzle of the 'what'- (interpretation) and 'how'- questions (technique).

In Dolmetsch's world, imagination is not an element which is discussed in the context of performership; it is largely relegated to the province of the listener.[51]

> In music many things occur which require the help of the imagination, because they cannot be clearly heard. For example, in a concerto with a full accompaniment, the soloist always loses such notes as must be accompanied fortissimo, and those which are in unison with the tutti. Intelligent listeners supply whatever is thus lost, through their imagination, and it is these listeners that we should endeavour to please before all. (Dolmetsch, 1915, p. 190)

Next to the tendency towards an evidence-based positivism[52] it is also noteworthy that qua methodology Dolmetsch's book is constructed as a dialogue with the written sources that are available to him; these sources are extensively quoted with only punctual comments. The information is presented as bare, collected 'evidence' without an extensive information-processing and interpretative follow-up.

[51] The words 'imagination' and 'fancy' are only used in the treatment of 'expression in 17th and 18th century music' when citing from historical sources such as Couperin's *l'Art de Toucher le Clavecin* (1717).

[52] That a positivist outlook does not automatically lead to the often-mentioned mechanical way of playing is testified by Dolmetsch himself in the following quotation that stands up for expression in the performance of early music: "A number of quotations from old books whose authority is not open to question […] will show how erroneous is the idea, still entertained by some, that expression is a modern thing, and that the old music requires nothing beyond mechanical precision"(Dolmetsch, 1915, pp. vii–viii).

2.1.2.2 The Interpretation of Music (Dart, 1954)

The notion of information is also a significant[53] element in *The Interpretation of Music* (Dart, 1954). Thurston Dart (1921-1971), a musicologist, conductor and keyboard player, considers the performer as a "re-creative" artist (Dart, 1954, p. 11) who needs to approach the score as "primary evidence" (Dart, 1954, p. 14) and as the ultimate source of information: "every scrap of information that an early composer conveyed to his performer by means of the written notation he used must be treated as though it were gold; it is very precious, and far more valuable than any editor's opinion, however enlightened this may be" (Dart, 1954, p. 15). Towards the end of the Dart's monograph, the perspective on the role of scores is more nuanced: "the written text must never be regarded as a dead laboratory specimen; it is only sleeping, though both love and time will be needed to awaken it" (Dart, 1954, p. 16). Next to the score, Dart acknowledges the presence of an abundant array of information sources:

> [An] enormous amount of information about the performance of early music [which] survives in contemporary sources, not only in treatises specifically dealing with the problem of interpretation, but also in prefaces essays, marginal notes, pictures, sculptures, miniatures, and descriptions in verse or prose of concerts, feasts, church services and amateur music-making. (Dart, 1954, p. 15)

Dart identifies a number of problems with information: 1/ sometimes the information is tantalisingly insufficient; 2/ in other instances it is too copious; 3/ sometimes the sources are too conflicting and confusing, for the scholar to be able to handle it; and 4/ "often the information comes from little men of immense pretentions, whose remarks have to be scrutinised with great care and weighed against less wordy but more accurate writers" (Dart, 1954, p. 16). Dart seems to be particularly concerned with the fragmented nature of information which impedes a state of complete certainty[54]. Confronted with these inherent challenges[55], Dart offers two strategies: the first one is to limit the impact of the information supplied by these sources 'strictly' to its immediate field of application (Dart, 1954, p. 16); the second strategy is somewhat surprising in that Dart recommends to compensate for the lack of certainty, due to the fragmented nature of information, by acting with boldness rather than timidity[56]. Throughout the monograph, information is granted the role of illuminator which is in need of imagination-related concepts such as 'interpretation', 'judgement', 'musicianship', and 'common sense' in order to be operational.

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[53] The word 'information' appears sixteen times, based on a google-books query.

[54] It might be tempting to see connections with a mathematical notion of information as the reduction (not the liquidation) of uncertainty (Shannon, 1948; Wiener, 1948/1985), a notion that heralds the Information Age only a few years before *The Interpretation of Music* is published.

[55] The first chapter is entitled 'the problem' where in the author identifies multiple problems.

[56] "Boldness is better than timidity, perhaps" (Dart, 1954/1967, p. 16).

> The performances must also be stylish; they must be illuminated by the fullest possible knowledge of the special points of phrasing, ornamentation and tempo that were associated with the music when it was first heard. The performer has every right to decide for himself that some of these special points are best forgotten; but he must at least be aware that they once existed, and that they were at some time considered to be an essential feature of a pleasing performance. (Dart, 1954, p. 164)

Dart concludes that "music is both an art and a science; like every art and every science it has no enemy save ignorance" (Dart, 1954, p. 16).

2.1.2.3 The Interpretation of Music (Donington, 1965)

In Robert Donington's publication, information appears mostly in conjunction with adjectives such as 'factual', 'reliable', 'important'. In a note to the second edition, he nuances the determining role of these bits of information by making a case for 'inspired performances' on the basis of 'informed liberties':

> If my own opinions have changed at all, it is that I am more than ever impressed by the need for inspired performances. […] No one is shocked or surprised when a Shakespearean producer lays firm hands on his text and makes a living drama out of it. We have to make living music out of baroque notation. Shakespearean studies have been going on for a long time, and producers can afford to take informed liberties. (Donington, 1965, p. 22)

Loyal to Dolmetsch, his teacher, Donington is a master of dialogue with primary sources and formulates the reasons for this referential abundance: they contain "more than merely factual information" (Donington, 1965, p. 26) and he thereby seems to tacitly imply that there is also another type of information: contextual information, which only indirectly hints to matters of interpretation. Donington advocates access to multiple sources in order to organize a dialogue between them and thereby offers, next to the two Dart-strategies (limited application & boldness), a third avenue towards a fruitful interaction with a variety of sources: dialectical confrontation.

> Almost exactly half the words in the present book consist of quotations from the early authorities and other witnesses themselves. […] they have an inherent authenticity with which no mere summary or discussion of them can compete; it is also that they convey so much more than merely factual information. That they are unreliable in varying degrees, self-contradictory or contradictory with one another in many respects, and tiresomely repetitive in others I shall be the first to admit I almost feel inclined to suggest that this is just why they are so valuable. (Donington, 1965, p. 26)

In general, Donington's discourse is characterized by constantly striking a balance between fundamental *memes* in professional musicianship: innate talent, inspiration, interpretation, judgement experience and factual evidence (as information).

> […] scholarship can only be helpful if it is used musically; yet at the same time it can only be used musically if he has plenty of it. He must be in a position to weigh one piece of evidence against another. An isolated statement, out of context and perhaps untypical, can lead to devastatingly unmusical results; and that after all is the last thing we want our scholarship to end in. […] We are trying to be better scholars in order to make better music. (Donington, 1965, p. 28)

2.1.2.4 The Spheres of Music: Harmony and discord (1972)

This multi-author publication, with 17 contributions by musicologists and prominent performers makes up the 1972 edition of the journal *Current Musicology*, and is dedicated to a special project entitled *The Spheres of Music: Harmony and Discord*.[57] As an incentive for the publication, project-editor and musicologist Léonie Rosenstiel refers to a state of affairs in which the interchange of ideas between practitioners, critics, musicologists, educators is problematic and "could lead to the isolation of each specialty and would ultimately be detrimental to all" (Rosenstiel, 1972, p. 81). In general terms, the aim of the publication is to propose a set of tools that can link theory to practice and promote an open communication.[58]

In 'Musicians', music educator and musicologist Donna Kay Anderson (°1935) specifies this objective in terms of an "informational-inspirational exchange" between the distinctive and specializing parties in music such as musicology, composition, performance and music education (Anderson, 1972, p. 84). Anderson envisages a part-whole perspective and promotes double-roles for musicians as well as scholars thereby sketching and anticipating the contours of what could be meant by the notion 'artist-researcher' or 'artistic researcher'.

In another contribution, violinist Yehudi Menuhin (1916-1999) prefers an alternative to 'information' by using the terms 'inspiration' and 'advice' as far as the contributions from musicology are concerned. Scholarly knowledge ought to play a role in an experimental and non-dogmatic process that involves trial, error, rejection, adaptation, acceptance, and embodiment before it can be become part of an aesthetic analysis or instinct.

> The musicologist is a mentor, one all the more inspiring since he himself has come to know the fire of discovery and re-creation. […] Personally, I look upon such eminent and sympathetic musicologists as Denis Stevens as invaluable advisers, whose counsel I accept and apply experimentally. Yet I cannot actually incorporate such advice into my interpretation until the specific suggestions have become organically integrated into my own aesthetic analysis and

[57] Issue 14 of *Current Musicology* represents only PART I of a series of articles dedicated to this topic. In issue 15 (1973), another 6 articles are bundled under the heading of *The Spheres of Music, PART II*.
[58] The authors in this publication do not pertain to the core of the HIP-movement; it is clear however that the discussion is inspired by challenges raised in a HIP-context.

> instinct. […] For dogma can never replace the improbable and unpredictable dictates of true inspiration that have always motivated all great stylists, composers or performers. (Menuhin, 1972, pp. 143–144)

In 'Toward a Unity of Performance and Musicology', finally, pianist Rosalyn Tureck (1914-2003) introduces the concept and ideal of a 'historically informed performance art'[59]. According to Tureck, two major problems impede the flourishing of informed performership: 1/ the time lag which occurs between the publication of musicological material and its absorption by those involved in performance—concert artists, teachers, and students; and 2/ a communication gap between the domains of musicology and performance (Tureck, 1972, p. 164). Tureck continues by discussing "several steps which may contribute toward the elimination of these barriers to achieving a historically informed performance art" (Tureck, 1972, p. 165). The first step towards taking down the barriers between scholarship and performance is a change in educational orientation and in work habits. According to Tureck again, "the inclusion of more reading in a performer's education would contribute not only to a reserve of historical knowledge but also to increasing reflection and judgment in performance style" (Tureck, 1972, p. 165). In addition to the requirement of reading the classic works and new publications, specific helpful steps toward expansion are: 1/ the reading of recent research reports in current musicological journals which contain not only recent "information" but also of their implied directions; 2/ systematic study of variants in manuscripts and early editions; 3/ study and communication with scholars who are working on manuscript sources. From a sequential perspective, Tureck proposes the following process of affairs:

> The student years consist of the comparatively simple task of amassing information, repertoire, and technical skills. Only after this stage has been passed can the real work truly begin for the thinking, creative person. And this work so combines intuition and the gathering of information that it becomes in itself an integrated and spontaneous process. (Tureck, 1972, p. 167)

Tureck hereby sequentially links information to imagination and creativity and challenges the notion that a performer must spend virtually all of his time developing repertoire and a professional level of

[59] Nicholas Kenyon and John Butt confirmed through personal mail-communication the presence of 'information' early in the century and both situate the combination 'Historically Informed Performance' within a context of discomfort with the concept of an authentic performance in the eighties. There's no clear and certain answer to the question 'who' exactly coined the term and 'when'. 1972 is surprisingly early in any case. An interesting and prominent clue regarding the birth of 'Historically Informed Performance' is to be found in *Authenticity and Early Music* (Kenyon, 1988). In the preface the editor refers to a series of pre-publication Oberlin meetings entitled *Musical Interpretation: the influence of Historically Informed Performance*. It is intriguing however that this terminology has not been used in the title of the edited volume in 1988. It enforces the hypothesis that unlike the notion of authenticity, the introduction of 'information' in the realm of musical practice was not an intentional and fully strategic one.

skill in technique and musicianship: “breadth of study does not necessarily deprive one of depth in work and accomplishment” (Tureck, 1972, p. 165). Her project is summarized as follows:

> The artist-performer must be concerned with forging the sum of all these parts into a great whole with depth of feeling and unobstructed freedom of communication. Such a marriage, though rare, is capable of producing great beauty and arrives as close to the composer’s thoughts as is humanly possible. This achievement is difficult on every level: it combines the musicological labour of the scholar with the technical and musical development of the gifted performer; it demands a talent for merging the two into an artistic unity. (Tureck, 1972, p. 172)

Tureck’s understanding of freedom and imagination is situated in a context of freely choosing from the information available rather than receiving and continuing unquestioned performance traditions.

In general, we can observe from these three contributions to *the Spheres of Music* a motivated attempt to (re-)unite information and performance into a dialectically unified conceptual and contextual space. The modes of interaction are carefully assessed in terms of inspiration, advice, information, or open communication which indicates the unsettled balance between academia-based knowledge production and the practice- and art-based concerns of musicians.

2.1.2.5 Musik als Klangrede (Harnoncourt, 1982/2004)

Musik als Klangrede (Harnoncourt, 1982/2004) is collection of texts produced by HIP-icon Nikolaus Harnoncourt (1929-2016) between 1954 and 1980. In the English translation (Harnoncourt, 1982/1995) ‘information’ and ‘informed’ are frequently used (the latter form especially in combination with the prefix ‘un-‘) but that does not always correspond with the German *Urtext* where quasi-synonyms as ‘unwissend’ are more common (Harnoncourt, 1982/2004, p. 27).
Harnoncourt is uncompromising in his judgement with regard to the un-informedness of performing musicians in the second half of the twentieth century. He forges an immediate link between a lack of knowledge and the inability to be really creative and regrets the disappearance of the *Gesamt-Musiker*, who is both a theoretician and practitioner.

> During the Middle Ages, the roles of theoretician [*Theoretiker*], practitioner [*Praktiker*] and ‘total’ musician [*Gesamt-Musiker*] were clearly delineated. The theoretician understood how music was constructed, but almost never performed it [*ausführen*]. […] The practical musician, on the other hand, could play music but had no knowledge [*Einsicht*] at all of musical theory. […] The instrumentalist and the singer were for a thousand years of Western history in a precisely analogous situation; they did not know, they were able, and understood without knowing [*er Weiss nicht, aber kann, und versteht ohne zu wissen*]. Lastly there was the ‘total’ musician, a person who was both theoretician and practitioner. Those in this category knew and understood musical theory, but did not regard it as an isolated subject removed from practical application, sufficient unto itself; they were able to compose and play music because they were familiar with and understood all of its related elements. What is the situation today?

> […] The practitioner, the performing musician, is just as uninformed [*unwissend*] as he was centuries ago. He is interested above all in performance, technical perfection, immediate applause and acclaim. He does not create music, but only plays it. Because the unity between his time and the music which he plays has been dissolved, he lacks the knowledge of music which the musicians of earlier periods possessed as a matter of course. (Harnoncourt, 1982/1995, p. 22)

As with others, for Harnoncourt the primary source of information for a performer is the score, and preferably the unedited manuscript. The score yields next to 'concrete information' also suggestions with regard to its actual performance.

> Above and beyond their purely informational content, the notational picture, both of the single voice and especially of the full score, possess a suggestive power, a magic that no sensitive musician can resist whether he wants to or not, or is even aware of it. (Harnoncourt, 1982/1995, p. 177)

> Aside from the suggestive power of the manuscript, which no print can duplicate, the manuscript also provides much concrete information, which we need to obtain directly wherever possible, and not from long-winded critical reports. (Harnoncourt, 1982/1995, p. 179)

2.1.2.6 Playing with History (Butt, 2002)

Harpsichordist, organist and conductor John Butt's *Playing with History* (Butt, 2002) contains one of the most comprehensive treatments with regard to the development of Historically Informed Performance and its embeddedness in philosophical and socio-cultural theory. Here, the acronym HIP receives its formal coinage. Throughout the text a careful negotiation between information and freedom is always palpable as the author asserts that "the notion of the uncomplicated restoration of past performance practice is paradoxically both erroneous and prodigiously productive. HIP serves to ground us in the present through renewed engagement with the past and in a way that has never been possible or necessary before" (Butt, 2002, p. 217). The process involves a loosening of traditional categories and a liberation of our thought from preconceived narratives about the past, resulting, according to Butt, to a net benefit that greatly outweighs the disadvantages. Butt advocates passionate commitment, risk and vision coupled with self-awareness, a sense of choice in performance, and responsibility to both the audience and the meanings of pieces of music (Butt, 2002, p. 23). By quoting Richard Taruskin, Butt summarizes this particular stance:

> What I am after, in a word, is liberation: only when we know something about the sources of our contemporary practices and beliefs, when we know something about the reasons why we do as we do and think as we think, and when we are aware of alternatives, can we in any sense claim to be free in our choice of action and creed, and responsible for it (Butt, 2002, p. 22; Taruskin, 1995, p. 19).

2.1.2.7 The End of Early Music (Haynes, 2007)

In *The End of Early Music* (Haynes, 2007), oboist, recorder player and musicologist Bruce Haynes (1942-2011) defines 'Historically Informed Performance' and equals it with 'Historically Inspired Performances':

> HIP (historically-inspired performance; historically-informed performance): a movement in reaction to the Romantic and Modernist movements. Also called Authenticity Movement; Early music Movement; Period Performance Movement; Second Practice. Contrasted here with: original performance. (Haynes, 2007, p. 14)

The last line is somewhat puzzling, especially since the author does not clarify what is meant by 'original performance'. From the context of the book, it can be deduced that he means performances that do not take into account elements of period performance practice but instead base their interpretation on personal/original interpretation and intuition. In that same vein, Haynes contrasts the process of information to the one of (arbitrary) interpretation.

> The idea that there is implied or built-in performance information that is not explicitly written in the score is a very different one from the modern idea of 'interpretation'. At least, from the kind of interpretation that amounts to arbitrary intervention; adding personal ideas to the music, or even (God forbid) improvisation. It is known that Beethoven made disagreeable scenes when a musician dared to add a few trills. (Haynes, 2007, p. 112)

In another *passus*, Haynes clarifies the relation between the information that musicological scholarship turns up, performance practice, and performing musicians. (Historical) information is foundational for the construction of a performance practice which in turn acts as a fund from which musicians can draw from and contribute to; Haynes also points to the potentially explosive character of information.

> There are also times when musicology turns up information that is awkward for performers. When all is said and done, historical musicology is still meant to act as a foundation of verifiable history on which performance practice can be constructed. Without it, we easily drift away from Period style, as we are now drifting away from copying original instruments. Performance practice is to performing musicians what original instruments are to makers, and manuscript sources are to publishers: a fund of reliable historical information that can be periodically revisited and reconsidered as both we, and it, change with time. (Haynes, 2007, p. 112)

2.1.2.8 The Notation Is Not the Music (Kuijken, 2013)

A last and recent source with regard to the use of the term 'information', is flautist Barthold Kuijken's *The Notation Is Not the Music* (Kuijken, 2013). Kuijken does not equal information with clear-cut instructions but rather considers it to be an attitude:

> Early Music is not only a particular repertoire, but it is also understood as including Historically Informed Performance. In my eyes, this should not be a goal in itself. It is rather an attitude, a way of reading and rendering a score, striving for historical authenticity and at the same time taking up one's full responsibility as a performer. It certainly does not consist of easy-to-learn fixed sets of rules. (Kuijken, 2013, p. 2)

Further, Kuijken asserts that being informed does not discharge a performer form captivating an audience. Moreover, since information will always be incomplete, additional elements of artistic judgement and imagination will always be part of the process:

> The wealth of historical documentation about the performance of Early Music can be studied, integrated, and put into practice. Such performances need not be less captivating for being better informed. However, it will be immediately clear that we shall never know, for example, exactly how J. S. Bach played (on which day?). All we can aspire to do is to fall reasonably well within the limits of probability and good taste. (Kuijken, 2013, p. 4)

The author considers information to be a tool that allows independent learning and relieves musicians from the master-apprentice model:

> In my opinion, and not only in the field of Early Music, any teacher's goal is to make himself superfluous and train his students to become autodidacts. As artists, teachers as well as students need to acquire and maintain their instrumental or vocal mastery and simultaneously become and stay well informed, and let these two areas of study fruitfully interact with each other. (Kuijken, 2013, p. 4)

In a passage where Kuijken relates notational information to invention and image-formation:

> As a result of my research I considered the notation to be mainly a type of roadmap, an aide-mémoire and help for invention, enabling the informed reader to create an inner image of the music. Quite naturally, this image is not definitive, but will change with time, mood, circumstance, and knowledge. Once this provisional image has been formed, in great detail, I can let it take an audible shape. In other words, I have to begin to play (or practice!) with the result clearly in my heart and mind. (Kuijken, 2013, p. 10)

Finally, the author observes that the original doubts about a fruitful relation between scholarship and performance seem to have been overcome:

> In earlier decades they could often be heard stating that "historically informed" playing is, by its very nature, dull, absolutely east below the line, as if knowledge and scholarship were death blows to genuine musicianship. Fortunately this attitude is encountered less and less frequently. (Kuijken, 2013, p. 104)

2.1.3 Summarizing observations

The authors considered above are clearly information-biased (unlike the academics that we discussed in Chapter 1); they strongly believe in the innovative and cathartic power of historical information and

look for means and methods to integrate their findings and those of musicologist in interpretation and performance. One of the leading threads in the information-focused mini-anthology of HIP presented above is therefore the continual negotiation between information (as evidence) and an imaginative, interpretative musicianship often formulated as a bilateral, dialogical relationship between the spheres of historical musicology and musical practice.[60] Within this spectrum, information is a mediating factor which varies in its performative impact. Below, the main perspectives are ordered from an authoritative impact to a more liberal influence.

- Information as evidence/truth (Dolmetsch, 1915)
- Information and authenticity (Kenyon, 1988)
- Information as advice and guidance (Menuhin, 1972)
- Information and/or versus interpretation (Dart, 1954; Haynes, 2007)
- Information as an element of dialogue and communication between theory and practice (Donington, 1965; Rosenstiel, 1972; Tureck, 1972)
- Information as inspiration (Anderson, 1972; Haynes, 2007)
- Information as stimulation (Menuhin, 1972)
- Information as part of an experimental setting (Menuhin, 1972)
- Information as liberation (Butt, 2002; Taruskin, 1995)

Next to a gradation of impact-ratio, the discourse-analysis in HIP also indicates pedagogical implications.

- Information offers new horizons (Tureck, 1972).
- Being informed should evolve into a work *ethos* – *Gesamt-Musiker* (Harnoncourt, 2004; Tureck, 1972).
- Information seeking as a new learning style (Kuijken, 2013).

A final observation concerns the style of representation with abundant textual references to primary sources is typical for the HIP-publications, especially for the pioneering ones. Its methodology (supposedly) breaths *Urtext*-authenticity and demonstrates a generic feature of an early stage engagement with a fresh repertoire of ideas and insights. However, presenting the bare facts without readily-available recipes for musicians is more than a question of writing-style. It points to a specific

[60] See for instance: "Evidence in musicology may be described, as in jurisprudence, as information discovered or provided in an investigation to establish conclusively the truth about something in question […] the potential exists for a diversity of interpretations of the information acquired, as well as for more than one acceptable solution. And, of course, all the evidence in the world will never guarantee performances that are convincing and vivid" (Stowell, 2012, p. 63).

attitude towards information; by presenting facts as "a fund of reliable historical information that can be periodically revisited and reconsidered" (Haynes, 2007, p. 130), a formula is created that invites or even necessitates continuous personal interpretation, imagination, embodiment, selection, integrates and recombination.

2.2 'Scientifically Informed Performers' Practice' [SIPP]

2.2.1 Situating SIPP

'Scientifically Informed Performers' Practice' [SIPP][61] is a label used here to refer to the innovative approaches to music performance that arose at the dawn of the 20th century and aimed at informing the instrumental didactics of the twentieth century with recent (late-nineteenth century) views on objectivity (Daston & Galison, 2010) and neuro-physiology[62]. Already in 1897, pianist Marie Jaëll (1846-1925) predicted that "the reform of musical education on a scientific basis is only a matter of time. Matters of fact, that have been established with certainty, challenge the rules of practice that are erroneous and insufficiently accounted for".[63] This scientific outlook on instrumental technique is most visible and advanced in the domain of piano-playing and leads to a series of pioneering publications.[64] In the preamble to *The Act of Touch in All its Diversity,* pianist and pedagogue Tobias Matthay (Matthay, 1903) formulates the ambitions of SIPP and the role of information therein:

> Evidently, teaching, as applied to Science, Harmony, or Language, does not here signify, that the discovery of the implicated Laws shall be left to each individual learner. On the contrary, the student is in each case informed of the already perceived laws and rules of procedure. Hence, he can in this case, at once 'start fair', and can make practical use of such information; and may even go further, and discover fresh truths ; instead of having to experiment for years, or maybe a lifetime, in his endeavours to rediscover for himself facts, already understood by others. (Matthay, 1903, pp. 2–3)

Initially, two distinctive schools develop.[65] The 'anatomical-physiological school' (Kochevitsky, 1967, p. 9) has Rudolf Maria Breithaupt (Breithaupt, 1905) and Tobias Matthay (Matthay, 1903; Matthay, 1932)

[61] See 9.6 for an explanation with regard to the use of 'Performers' Practice' rather than 'Performance'.
[62] German physiologist Emil Du Bois-Reymond (1818-1896) for instance had found that interaction (and thus motor coordination) between muscles was more important than sheer force and that by consequence the whole nervous system (including the central nervous system) should be taken into consideration in the debate on the development of instrumental technique.
[63] "*La réforme de l'enseignement musical sur une base scientifique n'est plus aujourd'hui qu'une question de temps. Des faits sûrement acquis s'opposent à ce qu'on persévère dans la pratique de moyens insuffisants, erronés*" (Jaell, 1897, p. v).
[64] Unlike their predecessors in the 19th century who expressed their ideas mainly by means of method-books and exercises.
[65] The distinctions 'anatomical-physiological school' and 'psycho-technical school' are adopted from the historical overview in *The Art of Piano Playing* (Kochevitsky, 1967). Kochevitsky refers to Gregori Kogan for coining these terms.

as its main representatives (Kochevitsky, 1967, p. 9) and looks in the periphery of the playing apparatus (shoulders, arms, hands) for solutions to practical problems that pianists encounter when playing a new and challenging repertoire on new instruments (*in casu* the modern piano). The proponents of this school seek to replace the mechanical finger-exercises that had been developed in the course of the 19th century (the 'finger school' – Clementi, Hummel, Kullak, Czerny, Hanon) with more conscious and insightful training methods. Relaxation, weight playing (by using the whole arm and not only the fingers), and different forms of instrument-directed movement are the key terms and main concerns.

The second school, sometimes referred to as the 'psycho-technical school' (Kochevitsky, 1967, p. 14), situates the core of instrumental technique not so much in the peripheral motor system and gravitational forces but rather in the central nervous system, in the human psyche and in musical imagination. The 'psycho-technical' school founds its basic principles on "the idea that the strength of our musical conception plays the main role in technical development. The musician who possesses a bright and exact musical imagination, i.e., who has in mind a precise and clear musical image, will find the best way for the realization of his goal" (Kochevitsky, 2004, p. 123). This particular route of enquiry finds its clearest expression in '*über die Physiologischen Fehler und die Umgestaltung der Klaviertechnik*' (Steinhausen, 1905).

Otto Ortmann, one of the central figures in the process of SIPP and Peabody Conservatoire professor, summarizes with noticeable cynicism and disappointment the challenges that both schools meet in the preface to his *The Physiological Mechanics of Piano Technique*:

> 'ALLE Theorie ist grau.' This Mefistofelian rejoinder of the philosophic Faust typifies, quite accurately, the usual attitude of the musician toward a scientific investigation of his art. The 'whys' and the 'wherefores' do not concern him; they are colourless superfluities, grey before the beginning, and, unfortunately, often grey after the investigation. […] A few eminent and praiseworthy exceptions tend but to emphasize the prevalent view. This attitude is to be regretted. It has served to keep obscure a field of great theoretical interest and practical importance: the border-land where science meets art. (Ortmann, 1929, p. xiii)

Categories such as 'relaxation', 'weight-playing', 'mental imagery' and 'imagination' have been very influential through the initial teachings of these pioneering authors and their students[66,67], and are as such (as nominal categories) still widely discussed in piano-studios today. These topical influences generally do not refer back to the sense for detail and scientific understanding that characterizes the early writings of SIPP, and, in general terms again, performers prefer to look for technical assistance in

[66] "The Breithaupt doctrine spread wherever people studied the piano and reigned supreme for almost two decades" (Kochevitsky, 1967, p. 9).

[67] In a recent publication regarding the teaching by Claudio Arrau (1903-1991) ample reference is made to Breithaupt's findings and didactics (Arx, 2014).

the realm of personal experience, alternative body-techniques (Alexander Technique, Feldenkrais) and the idiosyncratic know-how of guiding examples:

> Performers and teachers have always sought the fastest, easiest, and most effective means by which to achieve technical and musical perfection in their performance. This empirical method has been dominant for centuries and, unfortunately, still is today. Great performers and teachers have found correct paths of development through intuition. (Kochevitsky, 2004, p. 121)

It is remarkable then that these early SIPP-writings, although clearly originating in musical practice, are hardly known among musicians but have been heartily welcomed in the libraries of scientists and are now more than often a point of departure for studies in the psychology of music and more recently also in the area of performance science (Furuya, Aoki, Nakahara, & Kinoshita, 2012; Goebl & Palmer, 2008; MacRitchie, 2015; Parncutt & McPherson, 2002). Performance scientists Richard Parncutt and Gary McPherson propose the following analysis:

> Scientific thinking, methods, and results have influenced piano performance and piano teaching for well over a century, and innumerable piano-pedagogical publications have claimed scientific validity. On the one hand, artistic writers— often great pianists and piano teachers—have tended to fashion complex pseudo-scientific theories post hoc to match their beliefs, so that such theories can be controversial and unreliable. On the other hand, scientific writers tend to focus on simple hypotheses and assumptions that are easy to demonstrate and explain but are of limited interest to musicians. It is little wonder, therefore, that modern piano students are often unaware of the basic findings. (Parncutt & McPherson, 2000, p. 285)

So it seems that Ortmann's early complaint that the books, "when they are found in the teacher's library at all, too often still have their leaves uncut" (Ortmann, 1929, p. xiii) is still relevant.

With these general observations in mind we will now have a closer look at what the primary texts have to offer in terms of informational attitude.

2.2.2 A closer look at the modus operandi

A detailed report on the specific solutions that SIPP-musicians offer with regard to instrumental technique exceeds the limits of our enquiry. Our interest is rather information-focused and relates to the types of information used, the status that it is granted, and how the information is processed and used. We will analyse three source-texts[68] from this perspective.

[68] Steinhausen's seminal work on the physiological errors and reshaping of piano-technique (Steinhausen, 1905), is not included because, as a medical doctor without any piano-skills, he does not represent the musician's view, which is the focus of this chapter. However, it is worthwhile to note that the schools of Breithaupt and Matthay owe much to the groundwork done by Steinhausen. Breithaupt gives credit to Steinhausen for his discoveries and utilizes most of the technical terminology developed by the latter. Shortly after the publication of the first edition (1905), Steinhausen published his book *Die physiologischen Fehler und die Umgestaltung der Klaviertechnik* (1905). It led Breithaupt to publish a thoroughly revised edition in 1921. Pianist Donald V. Rupert

2.2.2.1 The Act of Touch (Matthay, 1903)

In 1903, Royal Academy of Music professor Tobias Matthay (1858-1945) publishes an encyclopaedic volume entitled *The Act of Touch in all its Diversity* which is a clear attempt to present a rational method for acquiring tone-production.

> The highly-talented may happen to discover correct forms of tone-production, the less-talented will probably fail. Tone-production discovered by accident is easily forgotten; whereas, this is not likely, once the facts are understood. The rational method of acquiring Tone-production premises knowledge of the laws that govern it. (Matthay, 1903, p. 15)

Matthay embarks upon his project by first formulating an essential problem: according to Matthay, training is lacking the integration between 'conception', which he calls 'musicianship' and which has an emotional as well as an intellectual side, and 'execution' which aims at communicating the concept to others and implies artistic judgement and the art of tone production (Matthay, 1903, p. 40). It is in this latter category that Matthay situates his project that aims at figuring out how knowledge of the instrumental mechanics can be related to knowledge about biomechanics and muscular function. Matthay's method is mainly one of keen observation, detailed description, experimentation and categorisation. No bibliography is included and the author draws on generic physics-related elements such as the physical nature of sound, string behaviour, key-resistance, impetus, rest, leverage to arrive at essential distinctions between weight- and muscular-touch, flat and bent finger-arm attitude, species of added-impetus-construction, key-surface and key-bed resting, and finger-, hand-, and arm-touches; these considerations ultimately lead to an extensive classification table of tone qualities and the means to produce them (Matthay, 1903, p. 254). Matthay's work is very text-oriented, developing an idiosyncratic and highly complex vocabulary, complemented with figures that visualize the different hand positions and movement; no musical examples are included.

From an informational perspective, it can be said that Matthay's effort is strongly focused on informing the technical aspect of pianism (not on 'musicianship' or 'artistic judgement'); however, by explicitly situating his project within a bigger scheme of musicianship, he assumes an evident and productive relation between the realms of informed technique and imaginative musicianship.

> To become pianoforte players, we must learn Music, and must acquire Taste, but we can only succeed in expressing what we feel musically, by means of the physical act of key-depression. (Matthay, 1903, p. vII)

notes: "Steinhausen's book is written for pianists, in language that can be understood by individuals not familiar with anatomical terminology. Failure to limit the extent of such terminology has made many later works of a similar nature incomprehensible to those for whom they were intended" (Rupert, 1963, p. iii).

By applying a science-informed method of observation, experimentation, and classification, he comes to describe, in a rather hermetic way, the basic elements, the atoms as it were, of piano-technique. Matthay advocates this science-informed approach to solve 'problems', to make progress, but mainly to challenge ignorance and tradition in an orderly, systematic and authorial fashion.

2.2.2.2 Natural Piano Technique (Breithaupt, 1905/1921, 1909, 1916-1921)

Almost simultaneously with Matthay's *act of touch,* German pianist and pedagogue Rudolf Maria Breithaupt (1873-1945) starts publishing a series of three volumes dedicated to the development of a 'natural' piano-technique (Breithaupt, 1905/1921, 1909, 1916-1921).[69] Breithaupt's project is immense and wide-ranging with the first volume (674 pages) as the most impressive achievement. Focussing again on the informational *modus operandi,* it becomes clear from the outset that Breithaupt aims at forging a synthesis of piano-playing that includes only facts [*Tatsachen*] that rest on practical evidence [*praktisch beweisbar*] and that have shown their value in everyday practice [*20 jährigen Erfahrungen im täglichen Kunstleben*] (Breithaupt, 1905/1921, p. VI). As with Matthay, Breithaupt focuses on the technical aspect of piano-playing and gives technique a dedicated place in the larger framework of artistry:

> Since the reproduction of the art-work — the sole object of our technic — exacts the greatest variety and multiformity in the means of expression, a "firmness, full of character" in the physical organism is an absolute essential. Those that would diffuse amongst others the fullness of life and their enormous wealth of tone and colours, i.e. those that would be artists and bear the name deservedly, must be in possession of means of expression, sufficient to meet every demand which art may lay upon them. (Breithaupt, 1909, p. 100)

To actually meet this demand, an information-strategy is fundamental. In Part I, Breithaupt presents a psycho-physiological basis of piano-technique in terms of anatomy, muscular function and nervous system and takes it as a point of departure for constructing a physiology of piano technique which includes a complex of instrument-directed movements (e.g. swing, throw, thrust, strike). The first volume concludes by applying these fundaments to practical and musical instances. Akin to Matthay, Breithaupt develops an extensive and highly complex vocabulary illustrated by anatomical drawings and movement analyses. Unlike Matthay, Breithaupt provides concrete links between the theoretical work and practical examples (in staff-notation). Breithaupt's work also includes an extensive bibliography, which reflects his ambition to embed the practical work in a scientific and generic framework. The reference-list includes scientific disciplinary fields such as anatomy, physiology[70],

[69] In our analysis, we refer to the fifth edition of volume 1 (1921).

[70] Physiology is usually limited to the study of the functioning of living organisms, animal or plant, and of the functioning of their constituent tissues or cells. SIPP-authors generally use the term to include also anatomy and biomechanics (muscular function).

psychology, acoustics as well as cultural domains (aesthetics) and musical-practical areas (schools of piano-playing, counterpoint, composition).

2.2.2.3 The Physiological Mechanics of Piano Technique (Ortmann, 1925)

Peabody Conservatory professor Otto Ortmann (1889-1979) sets out to study and measure every aspect of making music at the keyboard in order to come to inform an informed, didactical approach to practical problems. Ortmann publishes two books: *The Physical Basis of Piano Touch and Tone* (Ortmann, 1925) and *The Physiological Mechanics of Piano Technique* (1929). In the first book, he limits himself to the mechanics of the instrument by reducing the poetic effects of music to mere variations in key-speed and time duration; the second book is dedicated to the mechanics of muscular action with occasional excursions into the psychological field. The latter publication is subtitled as "an experimental study of the nature of muscular action as used in piano playing, and of the effects thereof upon the piano key and the piano tone". Ortmann measures, examines, and observes driven by the conviction that, due to the way the human arm and hand are constructed, there are fundamental factors that every player must comply with in order to play the piano efficiently and productively. In 378 text-rich pages and 223 illustrations (including comparative photos of human arms and röntgenograms of hands), Ortmann explains principles of the physiological organism, physiological movement (action and reaction, activity and passivity, coordination, relaxation, weight-transfer, vertical and lateral arm-movement), to eventually come to the basic touch-forms of piano technique (arm-legato, tremolo, staccato, Finger-stroke, scales, arpeggio, miscellaneous movement). As with Breithaupt, Ortmann provides an extensive reference-list which he orders in terms of 'General Anatomy and Physiology', 'Muscles: Structure, Function, and Action', 'General Principles of Physiological Movement', 'Physiology of Piano Technique'. Ortmann's dedicates two chapters to individual differences:

> Thus far the analysis of the physiological mechanics of piano technique was directed toward establishing the general laws upon which such movements are based. The conclusions drawn from the investigations of the various problems, both mechanical and physiological, hold for any non-pathological case. But the problems of the piano teacher are not only general problems, they are also, and preponderantly so, specific problems. And against the physiological constancy set up in preceding chapters, we have now to place the physiological variability that gives rise to the important question of individual differences. Musical talent would have no intelligent meaning were it not for this variability, which reaches into the finest fibres of man's nature. (Ortmann, 1929, p. 297)

One would expect Ortmann to leave some space for subjective application of his laws. However, in approaching the individual differences, Ortmann holds on to the same deterministic and classificatory

mindset and identifies individual differences and solutions with regard to the arm, hand, muscles, strength, neural circuit, metabolism.

Ortmann's approach to piano-technique combines insights in physiological fundamentals (the informational phase) which serve as a basis for tool- and lab-assisted experimentation (dynamograph, röntgen), and to the formulation of fundamental laws. The ultimate outcome of his investigations is an informed classification of piano-technique, which is to Ortmann only a first step. He is convinced that also the more imaginative and poetic aspects of music can be understood and reduced to basic and predictive mechanisms. In the citation below, he sets an agenda for the discipline of Performance Science[71]:

> The experimental procedure adopted in the present study shows the need for getting away from the mere subjective reaction of the teacher or pupil by using the graphic recording method. In a field where emotional colouring and imagination play legitimate and important roles, the physical and physiological bases can be separated only by eliminating the psychological factors. […] How the former lead into the latter, why the physiological facts are transformed into the colourful psychological effects is the next step in the investigation. Here we reach an interesting and formidable array of new problems. How does the imagination turn the mechanics of the piano into variegated pictures? How does the direction of the attention influence the performance of a passage? Is the whole or part method of practice better? Should both hands be practised from the beginning? When should pedal be added? Should the ear or the eye or neither come first? How can memory be improved? What will give the public performer more assurance? […] The list could readily be extended. And these are questions which I dare say even the teacher to whom "all theory is grey" would like to have answered. (Ortmann, 1925, pp. 377–378)

2.2.3 Summarizing observations

From an informational perspective, the three examples of original SIPP-sources presented above share a number of characteristics.

Firstly, all three authors gather and produce what they consider to be objective or factual information as a stepping stone to explaining and predicting more complex phenomena; their sources of information are 'laws' that are subsequently processed via application, rationalisation or systematic experimentation into an accumulative set of 'rules of procedure' which are then made available to the individual learner.

Secondly, information is used as a means to challenge received views and the *status quo*, to rationalize the elements of piano-technique, and to set in motion a process of knowledge accumulation.

[71] For more on performance science see Williamon, Pretty, & Buck (2009); Parncutt & McPherson (2002); Williamon (2004, 2013); Williamon, Edwards, & Bartel (2011).

Thirdly, within SIPP, the target domain of collecting, applying and producing information is proximally directed at the technical aspect of piano-playing. However, all three authors envisage and include a framework in which the proximal research outcomes are in service of more distal target domains such as 'musicianship', imagination, and conceptualization.

Finally, each author produces an exhaustive, rationalised catalogue of movements that leads to a variety of archetypical tone-production types. There is a claim to universality even when individual differences are discussed; this results in quasi-suffocating lists of possibilities, leaving almost no room for personal adjustment or interpretation.

Comparing SIPP with HIP, we encounter commonalities as well as differences.

Whereas both HIP and SIPP use information in an act of rebellion against tradition, a clear difference is manifest in their source and target domains and in the ways information is handled. In HIP the proximal source domain of information is extra-disciplinary since, in some cases at least, it implies the mediation of musicologists to present the source material; the distal source domain, however, is intra-practical since it involves the sayings, writings, and doings of bygone fellow musicians. In SIPP, the source domains of information are multiple and involve anatomy, neurology and physics; these fields of expertise are related to performers in the sense that every human has a brain, muscles, a skeleton, and lives in a physics-ruled environment, but the disciplines that investigate these elements of life are in terms of culture and discourse only distally related to the cultural practice of performing.

This situation has important consequences for the ways in which information is processed. In HIP, this is done by simply collecting and presenting the *Ur*-information, which can have a direct impact on interpretation and audible results. In SIPP, the first step is often to present (and if necessary also to translate) the *Ur*-information (anatomy, laws) and then to process it in rules, procedures and catalogues of tone production techniques. Although these outcomes are often presented as universal they are in fact an idiosyncratic interpretation of the informational elements. This observation can be substantiated by looking at the differential outcomes that are produced by SIPP-authors with regard to tone production. In Breithaupt's scheme, relaxation and gravity are of prime importance; by consequence, he sees no reason to abrogate the gravity-induced down-force once a key on the piano has been hit. Matthay, on the contrary, takes the mechanics of the instrument, and more in particular the swing of the hammer, as an argument to strongly warn again such 'key-bedding' or the directing of unnecessary force pressure.

> No greater Weight or Force than just suffices to prevent such rebound of the key in Tenuto and Legato, should ever be allowed to rest on the Key-bed. In fact it is unnecessary that more force than this, should ever even reach the key-bed. (Matthay, 1903, p. 87)

The focus of this chapter-section is not to arbitrate between these two views[72] but to indicate that, based on the same fundamentals (gravity and instrumental mechanics), two of the SIPP-pioneers come to very different conclusions. From an information-perspective, SIPP is not so much about collecting and (re-)presenting primary information but rather an effort to present newly produced, *bearbeitete* (pre-processed) information and personal knowledge. Although the authors themselves show clear signs of an informational impulse towards primary, extra-disciplinary sources, by processing this information into a punctual didactic format, this initial appeal as basic and imagination-stimulating information is lost, at least to a significant extent. Moreover, the didactic format is often presented in a hermetically closed and idiosyncratic language and system that run the risk of confusing the reader. This is a clear difference between HIP and SIPP: whereas in the first context information is presented in its primary form (with an abundance of quotations), SIPP publishes pre-processed information without much cross-referencing to the scientific fundamentals.
A final difference between HIP an SIPP concerns the target domain of their work. Whereas, in HIP, the research outcomes flow directly into interpretation and musical practice, SIPP limits its target domain to instrumental technique and situates it in a broader framework of imaginative musicianship where technique is only one of the building blocks.

The question remains to what extent these differences correlate to the differential ways in which HIP and SIPP fared in the course of the past century in terms of enduring informational value and impact. A definite answer to that question requires more in-depth analysis of both movements but by the observations presented above, at least a few lines of thought seem to be warranted: 1/ the integration of extra-disciplinary information in musical practice is successful if the source domain is close to the target-domain with only marginal mediation; and 2/ pre-processed information (especially into idiosyncratic languages) seems to be less appealing in terms of information value for performers and is therefore probably more amenable to pass via the route of master-apprentice teaching.

2.3 'Mainstream Performances' [MSP]

2.3.1 Situating MSP

Mainstream Performances comes close to Danuser's *Traditioneller modus* in his taxonomy of performance styles (Danuser, 1996); it is an interpretative culture that draws mainly on performance tradition as a source of information while untying (to a certain extent) the links with a composer's culture and with a contemporary art culture. Backgrounding this performance mode is the idea that

[72] Piano-technique is a central element in Chapter 12.

renowned performers (mainly of the 19th century) have handed down their understanding of stylistic and technical requirements to their students, who in turn passed the tradition onto the next generation in an unbroken flow of interpreting the opinions and insights of past masters (Fabian, 2000, p. 25). Accompanying this mode of performance is the influential master–apprentice model which is still the pedagogical cornerstone of many prestigious educational institutions. Next to its close connection with performance tradition, MSP is also very practically and technically oriented. In very generalising terms, it considers the musician as craftsman and a conduit of the composer rather than a creative artist.

2.3.2 Sample survey

The corpus of texts that pertain to the MSP-mode of interpretation is extensive and not confined to piano playing. For our purposes, which are of an exploratory nature, four contemporary texts on piano playing, authored by concert-pianists/teachers with a solid reputation in musical practice[73], are punctually examined (Berman, 2000; Fraser, 2003; Neuhaus, 1973; Sándor, 1981). This exercise has a dual purpose: firstly, exploring the semantic spectrum of the term information in these texts; secondly, and because of the technical inclination of MSP-texts, looking for references to a SIPP and assess the intra-disciplinary information-flow.

2.3.2.1 The Art of Piano Playing (Neuhaus, 1973)

Heinrich Neuhaus (1888-1964) is a prominent piano-pedagogue of the twentieth century. He taught at the Moscow Conservatory and counted among his students renowned pianists such as Svjatoslav Richter, Emil Gilels, and Radu Lupu. *The Art of Piano Playing,* published in 1958, near the end of his life, is a structured, personal reflection on the basic elements of piano playing. A central element in Neuhaus' pedagogical framework is the 'artistic image [*Bild*] of a musical composition' and its relation to technique. Akin to Dolmetsch (see 2.1.2.1.), Neuhaus identifies 'what'- and 'how'-questions but turns to other sources than historical information to address them. According to Neuhaus, the 'what' is conjured up by the imagination, emotion, inner hearing, and aesthetic and intellectual understanding (Neuhaus, 1973, p. 20) and precedes and determines technical development:

> The 'what' determines the 'how', although in the long run the 'how' determines the 'what' (this is a dialectic law). […] My method of teaching, briefly, consists of ensuring that the player should as early as possible […] grasp what we call 'the artistic image', that is: the content, meaning the poetic substance, the essence of the music, and be able to understand thoroughly in terms of theory of music (naming it, explaining it), what it is he is dealing with. A clear

[73] Alan Fraser is less known as a concert-pianist than the other authors but as an author widely read. In 2011 a second revised edition appeared. A video-fragment that summarizes the main technical points had 31.848 views on September 8th 2016 (Fraser, 2010).

> understanding of this goal enables the player to strive for it, to attain it and to embody it in his performance; and that is what 'technique' is about. (Neuhaus, 1973, p. 2)

Moreover, the artistic image is something that transcends reality:

> It is only by demanding the impossible of the piano that you can obtain from it all that is possible. For the psychologist this means that imagination and desire are ahead of the possible reality. (Neuhaus, 1973, p. 66)

Neuhaus' understanding of the 'image' and its relation to 'technique' is interesting for several reasons: 1/ Neuhaus has (implicitly at least) a type of imagination in mind in a context where a (divine) creator/composer has created a perfect (fictional) world which can only be imagined mimetically by a performer: "whoever is moved by music to the depths of his soul, and works on his instrument like one possessed, who loves music and his instrument with passion, will acquire virtuoso technique; he will be able to recreate the artistic image of the composition; he will be a performer" (Neuhaus, 1973, p. 29); 2/ the score potentially grants information about the essential world created by a composer just as environmental information provides information about an actual world; and 3/ implicitly, Neuhaus' remark with regard to technique holds clear reference to the psycho-technical school of piano-playing[74]: "the clearer what is to be done, the clearer, too, how it must be done" (Neuhaus, 1973, p. 83).

Neuhaus asserts that "it would be very interesting for young pianists to have more detailed information about the way in which prominent pianists prepare for recitals and about their concert work in general" (Neuhaus, 1973, pp. 214–215) but has a rather low esteem for information that lays down prescriptions in textbook manuals and by that expresses an implicit scepticism with regard to SIPP.

> Textbook methodology, which mainly lays down prescriptions, so-called hard and fast rules (even if they are tested and reliable) will always be but a primitive, primary, simplified method, which at any moment when coming into contact with reality needs development, rethinking, clarifying, livening up, in short - a dialectic transformation. (Neuhaus, 1973, p. 62)

Truthful to his view, Neuhaus does not include any bibliography and also no explicit within-text references to SIPP-sources.

2.3.2.2 On Piano Playing (Sándor, 1981)

The monograph by György Sándor (1912-2005) offers an organised account of the author's perspective on piano technique. Unlike Neuhaus, Sándor does not take the artistic image of the composition as a point of departure, but reverses the sequential order and starts with overviewing the determining

[74] And in a way also close to the notion of action-effect coupling in psychology (Hommel, 1996) which will be discussed in Part III.

factors in piano technique (music/emotions/motions, the instrument, the human performing mechanism) and the technical patterns (free fall, finger-technique, rotation, staccato, thrust) before discussing the musical aspects of piano playing (see part three: "technique becomes music"): "[when] the technical solutions are available; the rest depends on our perseverance, imagination, and talent" (Sándor, 1981, pp. 208–209). From a systematic point of view, Sándor grants different roles to the unconscious, conscious and critical mind, implying that it is only in the latter capacity that information (as communicable knowledge) can play its role.

> The conscious mind's valuable role is irreplaceable, for it continues to enrich and develop us during our entire lifetime; it is in charge of learning. On the other hand, the creative processes are the product of the subconscious and unconscious mind[75]; they produce the spontaneous and involuntary activities. All that has been said about the vital role of the conscious mind refers to the learning processes: creativity is not a function of the conscious mind. […] The use of the conscious mind is limited to acquiring the skill of piano playing. […] The critical mind is only helpful in establishing new habits and in eliminating bad ones. (Sándor, 1981, p. 188)

In his technical approach Sándor emphasizes the use of gravity, an "inexhaustible source of energy" (Sándor, 1981, p. 37), during playing and thereby explicitly refers to the SIPP-generation[76]. However, the author is cautious about the practical impact related to the vocabulary and information that SIPP generated:

> There was a need for new ideas because it was evident that the modern piano could not be mastered by sheer muscular force and especially not by the relatively weak forearm muscles that move the fingers. Breithaupt's technical terminology spread rapidly, but it was employed in a rather confused and confusing way. (Sándor, 1981, p. 37)

In general, Sándor asserts that the totality of piano playing must be understood and described and not just some of its components. Sándor views information as a fragmented field of small facts lacking coherence and makes an effort to organize the abundance of information by establishing and describing basic concepts (anatomy, physics) and then adapt and refine them for use in a practical context.

> Most books on piano playing have certain merits. Some of them, such as Rudolf Breithaupt's book *Die Grundlage der natürliche Klaviertechnik* (1925), were quite a revelation in their day. Others present valid observations on technique, interpretation, and performance practice. Still

[75] "If the conscious mind is like a spotlight, the subconscious is similar to a large dimly lit cave; the spotlight can enter it and pinpoint small spots, but it can never illuminate the entire area at once. It is in the subconscious mind that we store most of our experiences, and it is also the place where most of our memories are submerged. There is still another region where most of the vital bodily processes are controlled by the unconscious and automatic nerve centers; the conscious mind has hardly any control over these centers" (Sándor, 1981, p. 187).
[76] A general assessment of SIPP is mentioned in the preface; Breithaupt is referred to in relation to 'free fall' and 'relaxation' (Chapter 4).

> others are filled with impressive biological, chemical, and anatomical statistics and resemble nothing so much as scientific textbooks. Obviously all of these aspects must be considered in examining piano technique. But I believe that it is the totality of piano playing that must be understood and described and not just some of its components. (Sándor, 1981, p. x)

To accomplish that, Sándor chooses to start from common-sense observations and basic understandings (for instance about the human performing mechanism) instead of building on the work of predecessors. Akin to Neuhaus, Sándor is sceptic about the use of textbook-references in clarifying piano-technique and does not include a bibliography.

By the end of the book, Sándor addresses the notion of information in the context of musical communication and is clear about its incompatibility with this domain: "Music is about evoking feelings, not about communicating information" (Sándor, 1981, p. 198).

2.3.2.3 Notes from the pianist's bench (Berman, 2000)

Boris Berman (°1948) reflects on his experience as a teacher and a concert pianist and organizes his acquired understandings, accordingly, in two parts: 1/ *in the Practice Room*; and 2/ *Shaping Up a Performance*. Berman does not aim at being exhaustive or revelatory but rather at offering an addition to the primary instruction by a teacher. Berman's general view on the relation between practical (technical) and ideal (musical) aspects of music-making is that "these two areas cannot be addressed independently of each other; technical work should always have a musical goal in sight, and lofty ideas need to be supported by know-how to be put into practice" (Berman, 2000, p. x). In doing so, the main sources of information to Berman are his own experience and the experiences of other pianists to which he refers in endnotes. Berman's contribution is reflective rather than innovative; the instances where 'information', as a term, is explicitly used, point to an understanding in which information is an element of a decision process and to sensorial information in a feedback- and learning-process.

> In passages containing different note values, stylistic considerations inform the performer's decision whether the differences between the note values should be clearly marked or blurred. (Berman, 2000, p. 77)

> Tireless listening to one's own playing is the key to efficient practicing, because it informs the pianist about anything that may need improving. (Berman, 2000, p. 126)

> [There are] two kinds of 'musical ears'. One is the 'subjective ear', the pianist's image of the kind of sound he would like to produce. The more specific the image, the better the results will be. The other is the 'objective ear', which refers to the musician's ability to monitor the sound that actually comes from under his fingers. (Berman, 2000, p. 4)

Implicitly, the main source of information is the score which serves as a communication device between a creator and re-creator via a process of decoding. Berman's view on imagination in

performance is clearly a mimetic one; in chapter 7, with is very tellingly entitled 'deciphering the composer's message', the author asserts that:

> The work of a performing musician is not a creative process (in the sense of actually producing something new) but a *re*-creative one. […] We are the medium through which [the] music becomes audible […] the performer's creativity lies principally in the area of musical expression in finding the right feeling […] the performer's freedom should never be denied; rather, it must be defined[77] (Berman, 2000, p. 139).

> I believe that if a teacher succeeds in igniting the student's imagination, the result is much more creative than anything that dry, albeit efficient, directives can accomplish. (Berman, 2000, p. 204)

Seeing the 'big picture' of a work is to be accomplished by familiarizing oneself with the composer's entire output (chapter 8) and emotional identification with the piece (chapter 9).

Berman's book does not include a separate bibliography; references are present in the notes to each chapter (Berman, 2000, pp. 211–213) and for the most part of an intra-disciplinary nature (e.g. Brendel, 1991; Leimer & Gieseking, 1972; Neuhaus, 1973; Sándor, 1981) with a few excursions into historical musicology (e.g. Drake, 1981; Eigeldinger, 2004), music theory (e.g. Schoenberg, 1911/1978) and related arts (e.g. Scully, 2009; Stanislavsky, 1948). Berman does not refer to any SIPP-sources.

2.3.2.4 The Craft of Piano Playing (Fraser, 2003)

Alan Fraser's (°1955) career both as a concert-pianist and a pedagogue is more modest than those of the three preceding authors. Nevertheless, his publication, *The Craft of Piano Playing* (Fraser, 2003), and the accompanying video-fragments are frequently consulted by pianists. Fraser's publication is technical in its purposes although primary importance is attached to musical imagination.

> A musician's art must grow not from technical concerns but rather be conceived in a world of fantasy and imagination, and be born of a burning desire to communicate something of that world through the medium of sound. (Fraser, 2003, p. 23)

Fraser explicitly refers to Neuhaus' *the Art of Piano Playing*, stating that he envisages to lead pianists to greater success in implementing Neuhaus' precepts by showing them more clearly *how* to fill the missing link between musical intention and physical execution (Fraser, 2003, p. 1). He organizes his effort by discerning foreground elements (movement – hand strength – wrist/arm/fingers), middle ground concerns (rhythm – phrasing) and background aspects (telling a story – emotion).

Next to intra-disciplinary sources authored by 'great' pianists and an observational fascination with the abilities of Vladimir Horowitz, Fraser explicitly calls in extra-disciplinary information to feed his

[77] Here, Berman, in true romantic style quotes pianist Grigory Kogan: "the musical score is Sleeping Beauty, the performer is the Prince releasing her form the spell" (Berman, 2000, p. 77)

practice with new insights. The sources that are drawn from do not pertain to the field of science but to 'alternative' body-techniques and perspectives on movement (T'ai Chi Chuan and Feldenkrais Method).

> The more this analytical process [the analysis of Horowitz's pianistic ability] encompasses, the better chance it has of bringing relevant new information into the picture – thus my 20-year study of T'ai Chi Chuan and Feldenkrais Method. […] the principles I learned away from my instrument allowed me to return to the piano with new insights. (Fraser, 2003, p. 4)

Fraser's book contains one brief reference to SIPP-pianists Breithaupt and Ludwig Deppe (Fraser, 2003, p. 47) and a critical review of Tobias Matthay's rotation technique.

In general, Fraser's vision on information is one in which informational elements are the (fragmented) bits of knowledge in a process of pragmatic integration. Fraser's pragmatism applies to extra-disciplinary information as well as to basic, sensorial information in a feedback-context.

> The richer the sensory information being sent to your brain (the actual kinaesthetic or proprioceptive images), the better basis you have for organizing movement. (Fraser, 2003, p. 23)

> This new view of movement [the author refers to the views by Tobias Matthay and Moshe Feldenkrais] as it relates to piano playing is rich in its substance and also in the myriad details of its application. But piano playing is a pragmatic undertaking – how can we possibly do justice to Beethoven or Chopin if our minds are preoccupied with all this new information? Well of course, we can't. All this must be integrated. We still are nowhere near the sophisticated simplicity of an evolved technique, the fusion of these many disparate elements into a unified gestalt. (Fraser, 2003, p. 53)

Fraser's bibliography contains 19 items mostly related pianist-authors (Gieseking, Hoffman, Horowitz, Neuhaus etc.) and also reference to *Awareness through Movement* (Feldenkrais, 1990).

2.3.3 Summarizing observations

The limited scope of this sample survey does not allow definite conclusions regarding the role of information in MSP, but at least some general characteristics can be inferred.

- All authors consider scored repertoire as primary sources of information and find informational guidance not so much in textbooks but rather in the guiding example of teachers and prominent musicians.
- A relation between information and decision-making is acknowledged (Berman, 2000).
- Information is used in the context of sensorial feedback in a learning process.
- Information processing requires integration, otherwise it can work inhibiting (Sándor, 1981).
- Music and information are not a fit in the domain of interpersonal communication, music is about evoking feelings, not about communicating information (Sándor, 1981).

- The topics of SIPP are still relevant (anatomy, free fall, relaxation, imagination) but punctual references to pioneers and primary sources of SIPP are rare.
- Bibliographies are either absent or contain intra-practical references related to colleagues and predecessors.

The limited interest of MSP in extra-disciplinary sources of information and the focus on intra-practical knowledge and tradition (score, teachers) is not surprising. The approach to music performance in MSP is largely based on 18th and 19th century views of music production and performance as an autonomous art practice which implies the establishment of a practice-specific canon of reference works (Goehr, 1992; Weber, 1994; Berger, 2000).

2.4 Information in music performance

Exploring information in the field of three performance orientations brings about a mixed picture with regard to its role and value.

HIP is directed at informing issues of interpretation[78], is connected to historical but still intra-practical information sources, and presents the elements of information in its *Ur*-form. The disciplinary field of historical musicology acts, in some cases at least, as a mediating agent. HIP succeeded in acquiring a valued status in musical life (dedicated departments in conservatories, journals, festivals) but the story of HIP over the last century has been one of negotiating an equilibrium between information as evidence, freedom, experimentation, and imagination.

SIPP is directed at informing instrumental technique and has the fields of anatomy, bio-mechanics, (neuro-)physiology, and physics as its main source domains of information. These fields are more distally related to the epistemic horizon of musicians and the information processing style is one in which the extra-disciplinary elements of interest are transformed into punctual, instrument-specific and extensive classifications of tone production techniques. The heydays of SIPP are to be situated at the beginning of the 20th century but nowadays, the insights and accomplishments are only indirectly present in instrument-related discourse of musicians and have quasi-vanished from the radar of performers in terms of the pioneering publications.

HIP and SIPP are specifically involved in constructing a bridge between a practical and extra-disciplinary theory via the route of information. MSP lacks such an intentional link to sources of information that are located outside the perimeter of the practical engagement with the instrument and musical scores. Here, the performer's own, score-based experience is coupled with a master-apprentice instruction

[78] Not all early music icons would agree on this formulation; baroque violinist Sigiswald Kuijken for example declares that 'interpretation' should be banned from a musician's vocabulary and be substituted by 'realisation' (MusicFrame Films, 2015).

model and the guiding examples of leading musicians which serve as the main road to interpretative and technical excellence.

From this, it can be inferred that, contrary to the polarizing statements presented by academics in Chapter 1, the role and value of information in a music performance context is multi-layered, significant, and can be discussed more systematically (but still tentatively) in terms of Information sources, information processing modes and information target domains.

2.4.1 Sources of information

What can be induced from our analysis is that in score-based performance, the score is looked upon as a primary source of information. It is a coded (re)presentation of compositional activity and therefore in need of decoding, interpreting, imagining, or experimenting in order to establish the sonic conditions for an actual musical experience. Next to its seminal role in representing a musical composition and providing interpretative cues, the score is also of primary importance in the context of skill development via a process of 'deep learning'[79]. The score contains latent information with regard to fingering, style, ways of phrasing and articulation; therefore, in instrumental musicianship, the didactic path is often one of 'playing a lot of pieces' in order to implicitly acquire from examples the building blocks of instrumental and musical technique[80].

A second context in which information surfaces in the discourse of music performance is as an element of sensorial feedback. Auditory and tactile feedback are essential features in a learning process but also in the act of a staged performance. Here the body and the sounding environment act as main sources of information.

A third fount of information concerns elements provided by teachers, peers, colleagues or guiding examples. The master-apprentice model is a highly valued and influential one in art education and artistic practice and centres around the common-sense pedagogy of learning by example and total immersion in a field of expertise which is holistically represented or embodied by an experienced master.

A fourth cluster contains written sources or theory as information. In HIP, written sources play a crucial role in establishing new/old ways of performing historical compositions. These sources are intra-practical: they pertain to the realm of musical practice in a wider sense (including instrument-making, for instance). Extra-disciplinary information is prominently present in SIPP but the journey of SIPP and

[79] Deep learning is connected to the concept of neural networks. In the sphere of Information Technology it refers to a particular way in which computers are trained and fine-tuned on the basis of lots of examples rather than by human programming. A well-known application of deep learning is the training of the most advanced chess-computers (Goodfellow, Bengio, & Courville, 2016).

[80] Such a focus on deep learning is especially apparent in piano methods which are almost always structured as a collection of graded pieces.

the quasi-absence of bibliographies in MSP show that informing practice with extra-disciplinary information is all but evident.

Modelling this variety of sources into a catalogue results in three categories:

- Sources of analogue information
    - Body & environment: sensory feedback from playing (tactile/motor/audio/emotional)
    - Co-players (body-language, gestures), audience
    - Examples, models (performances, DVD, audio)
- Sources of coded information
    - Score
    - Written sources:
        - intra-practical (historical performance practices, biographies, methods, music theory)
        - extra-disciplinary (e.g. physiology, anatomy, psychology)
- Sources of hybrid information (integrates coded and analogue information)
    - Teacher

2.4.2 Information processing modes

Sources of information imply differential modes of information processing: analogue feedback gives rise to a process of experience, embodied integration, imitation, while coded information requires an act of interpretation. A third adjoining context in which information is processed is the one of 'inspiration'. Inspiration can relate to any information source but is feeling- and emotion-directed, referring to an ineffable process of influence and implying a connection with a supernatural realm. Whereas in an information process, a single element of information often implies a bigger field, inspiration seems to be of a more independent, serendipitous and context-free nature that has the capacity of taking over the rational and predictable behaviour of the artist.

2.4.3 Target domains and impact

In function of the two main target domains that we encountered in our analysis – interpretation and instrumental technique (both on a systematic and a personal level) – information is sometimes seen as evidence producing universal 'laws' but can, in other circumstances, lead to freeing up corroded habits and traditions, or be a source of inspiration and further development. From an information-perspective a differential attitude can be traced between a tradition-based practice and more rebellious lines of thought. The latter group (HIP and SIPP) explicitly aims at shattering cherished beliefs and personal intuitions by invoking extra-disciplinary information, whereas the former one (MSP) seems to be primarily concerned with preserving music's autonomous status by preferring intra-

disciplinary routes of references and is therefore reluctant to open to potentially perturbing information.

We can conclude that the semantic spectrum of information in the realm of music performance is extended, free-floating, multifaceted and idiosyncratic. The use of 'information' as a term and the attitude that performers maintain with regard to its value refer to deep-felt and memetically acquired artistic dispositions. A more extended analysis imposes itself to come to a systematic understanding of the obstacles and opportunities that the relation between information and imagination yields. In the following chapter, an excursus into the history of ideas will be called into support of such a considered understanding.