Theorizing Pianistic Experience: Tradition, Instrument, Performer

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ABSTRACT

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This dissertation theorizes expressive sound in piano performance. It views the act of obtaining a desired sound as an act of subtly adjusting to continually changing conditions of sound production. It takes a performer’s perspective, focusing on the personal experience of sound, as it is being created in performance.

Considered on a fine scale, the sound of a piano performance is continually evolving, contingent on the acoustic environment, the characteristics of an instrument, and other circumstantial factors with which a pianist works in performance. Although the focus is on real-time performing experience, in the act of any particular performance, a pianist relies on robust previous experience. This dissertation particularly considers the dynamic, interactive loop of the conception, the making, and the hearing of sound in piano performance. The continued re-enactment of this loop is considered as grounding a specifically pianistic cognitive ability which draws on both the haptic and auditory experience of sound at the piano.

My approach to piano playing is rooted in work in critical ethnography as well as theories of cognitive function. These two seemingly disparate areas of enquiry share important common ground in their treatment of conceptualization and experience as mutually definitive. An underlying theme throughout this research is the dynamic interplay between theoretical understanding and lived experience. The focus, however, is
consistently on piano playing, seen as the act of engendering artistically charged sound through the interaction with a complex and versatile musical instrument, the acoustics of sound and space, and the expressive possibilities of personal experience.
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Heartfelt gratitude to my family for their unconditional support and love.
DEDICATION

To the memory of my principal teacher

Ms. Rosetta Goodkind

(1917-2011)

who opened up worlds of experience for me
INTRODUCTION: APPROACHING THE TOPIC OF SOUND IN PIANO PERFORMANCE

Sound and Act

This dissertation views piano playing as an accomplished cognitive ability. It explores a particular approach to piano playing, which is focused on sound. The goal of the research is to offer a multi-faceted and distinctly nuanced account of the act of artistic piano playing. The main focus is on how pianists achieve a rich variety of artistically charged sound qualities during a performance.

While this focus on sound is clearly not characteristic of all available approaches to artistic piano playing, it is a definitive characteristic of a significant body of experiential accounts by eminent figures in the world of piano performance, performers and pedagogues alike.¹ This focus brings about some significant questions and requires some fundamental shifts in habitual modes of describing not only piano performance but also musical sound.

One of the fundamental themes of this research is the relation of sound and experience. Throughout this work, sound and experience are treated as essentially inextricably intertwined aspects of a continual, dynamic interaction. When addressing possibilities of sound quality (e.g. mournful, shrill, pastoral, grandiose, hushed, singing, etc.), experience has to be taken into account. The possibilities for variations in sound

¹ Some figures discussed at different points in this work include Heinrich Neuhaus, Walter Gieseking, Joseph Hofmann, Catherine Goodson, Alfred Brendel, Charles Rosen, Philip Lasser.
quality during performance cannot be exhaustively addressed apart from the experience of a person engaged with the sound. Artistically charged sound emerges in a personal interaction with sound in performance.

My research into piano performance, with its focus on the ability to draw out a rich variety of sound qualities, is fundamentally indebted to theoretical work in cognition that treats cognitive function as a dynamic, interactive process. Such work approaches existence in general in terms of tight-knit, dynamic interactions between an organism and its environment. Enaction, a theory developed by a team of researchers headed by Francisco Varela in the 1980s, describes cognition as a continually dynamic process in which an organism explores as well as acts on different features of its surroundings. This theory circumvents the notion of describing an organism itself or the environment itself, as well as the problem of determining which aspects of experience belong on which side of such a split. Instead, the theory focuses on the organism’s active being in its environment, offering a dynamic vision of existence. Enaction proposes a view of existence in terms of experience, and treats experience as continually active dynamic process.

I concentrate on sound from a performer’s position, from the position of a person actively interacting with sound and the instrument, which presents particular possibilities for bringing the sound into being. Playing music at the piano is treated as a non-replicable act, an act during which a pianist is continually engaged in multi-layered “negotiations” with both the instrument and the sound as it is being made in each unique moment and

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circumstance. Piano performance is addressed as a dynamic interaction unfolding anew every time the pianist plays. The conception of cognitive function as continual, dynamic interaction provides a particularly productive framework for exploring the processes at work in piano performance, including the subtleties and complexities that characterize the expert ability to draw out a rich variety of sound qualities.

*Approach and Methodology: Engaging Experience in Scholarly Work*

Important sources for this research include pedagogical manuals, published testimonials by historical and contemporary figures in piano performance, and experiential accounts by younger as well as more established professional pianists, as well as my own personal experience. One fundamental goal of this research is to incorporate such practical insight, often gained throughout life-long experience, as thoroughly as possible into scholarly inquiry. Such close dialogue may be productive in terms of both theory and practice, as each continually informs and shapes the other.

“Ethnographic truths”

In engaging experience, ethnography is a key research approach. Thus, my approach to my subject and the shape of my work are deeply influenced by methods and issues in ethnographic work. Such work has been instrumental in guiding me towards my focus on experience, as well as in letting me confront problems in engaging experience within the scope of a research project.
One such difficult issue is that of exhaustive representation, or put differently, of defining the scope of the “population” that is the object of the research. In talking about performing experience, it was clear to me from the outset that I could not claim to be articulating a totalizing, universal experience. My aim is to engage performance holistically, as a full, multifaceted experience, but the account of experience I offer is not one that claims to encompass all possible performing experience. An effort to formulate an account of experience that would be incontestably valid for a given delimited population leads into notions of objectivity, and by extension, into an incompatibility with conducting research centered on experience. Without engaging discussions of such incompatibility, I would like to briefly reference some thought on ethnography that has been very valuable to me in articulating my methodological approach and shaping my relation to my subject matter.

These include the strong and clear position articulated by James Clifford in the introduction to a widely influential compilation of texts on ethnographic writing, *Writing Culture: The Poetics and Politics of Ethnography*: “Ethnographic truths are […] inherently partial – committed and incomplete.”[^3] Clifford points out an inherent impossibility of complete description of processes and phenomena which do not exist in enclosed systems of static and therefore exhaustively specifiable conditions. The truths ethnography pursues do not afford exhaustive, totalizing views. For all their relevance to human experience – and because of it – they cannot be formulated as final, definitive statements. Thus, they remain incomplete, stamped with the searching commitment of

their authors, true as well as open to negotiation. On Clifford’s view, this inherent incompleteness of ethnographic truths creates an opportunity to look continually deeper into the processes and phenomena being studied.

Auto-ethnography: Tapping into first-hand experience

I have encountered the notion of the “autoethnographic text,” as one “in which people undertake to describe themselves in ways that engage with representations others have made of them.” The citation is from the work of performance theorist Mary Louise Pratt which, while much more socially engaged than my current research, has been very helpful to me in thinking about the role of my own personal investment in the issues on which my work focuses. My personal experience of piano playing is a central steering force behind the conceptual formulations towards which I will be working. Pratt’s characterization of autoethnography as involving “selective collaboration with and appropriation of idioms” or often featuring “more than one language” feels particularly relevant to the spirit of this work.

Pratt anchors her essay on a historical document dating from 1613, a letter written by an indigenous Andean to King Philip III of Spain, the top authority of the conquering power. Pratt focuses on the document as an illustration of a profound mixing of discourses, cultures, and worldviews. The twelve-hundred-page long letter, representing life in the Andes in a “mixture of Quechua and ungrammatical, expressive Spanish”, as

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4 Mary Louise Pratt, "Arts in the Contact Zone," Profession no. 91 (1991), www.class.uidaho.edu/thomas/.../Arts_of_the_Contact_Zone.pdf.

5 Ibid.
well as “captioned line drawings,” was found in an archive by a European scholar in the early 1910s and became the object of scholarly attention in the 1970s. Pratt focuses her analysis on the conditions which would produce such a letter, as well as the conditions which allow – or conversely deny – the possibility that the letter become a successful mode of communication. Under what conditions does such a thoroughly heterogeneous project come into being, and how does it go from being unintelligible to its intended audience to becoming a point of contact between different cultural realities?

Pratt identifies as a key impetus for autoethnographic writing, such as the 1613 letter, the search for a “point of entry into [a] dominant [discourse].” The author of the letter aims to present a self-image which is intended for a foreign (dominant) addressee, and to create this self-image, he borrows, appropriates, and redefines terms which he believes would be understandable to his foreign addressee.

To return to piano playing: although speaking of a dominant discourse that marginalizes performance would be a clear distortion of current conceptual thinking on music, it is similarly clear that the integration of performance into some dominant modes of scholarly musical discourse is an enterprise that is still developing. The position from which I am approaching my work is in some respects similar to the projects Pratt theorizes, although the confrontation which is definitive of Pratt’s examples is clearly not present. The similarity is mostly rooted in my position as both theorist and performer, and my investment in making a performer’s experience accessible in theoretical terms by mixing and interpreting discourse that is characteristic of two related but in many

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6 Ibid., 1.

7 Ibid., 2.
respects still separate domains. Mixing of discourses is definitive of an auto-ethnographic project, as Pratt theorizes it, and in the sense that such mixing is definitive of the current work, auto-ethnography becomes a central feature of the work as a whole.

Engaging primary sources

As noted at the outset of this section, my work makes extensive use of documented statements by pianists, drawn from printed sources as well as recorded interviews. These statements are treated as primary sources of information presented in a performance discourse. In order to incorporate such statements into this research work, I have done some extensive interpretive analysis of their meaning and content. Extended direct citations, however, are also frequently offered throughout the work.

My use of such primary material is consistent with Pratt’s theorizing of an auto-ethnographic endeavor. My life-long personal experience of professional music schools, festivals, competitions, and concert performances has made me familiar with discourses in practical performance settings. Under Pratt’s analysis, the author of an auto-ethnographic text is positioned simultaneously in two co-existing but largely autonomous discursive realities. By mixing and interpreting concepts characteristic of different discursive practices, Pratt’s auto-ethnographer creates a self-portrait which reflects back on her/him-self in a new light, while also inviting a wide audience of “outsiders,” groups that would not commonly share in her/his experience and would typically have no access to it. It is in this spirit that my work addresses the experience of sound in piano playing.

8 Ibid.
My personal experience at the piano lies at the core of the endeavor. The work aims to open up this experience and make it as fully as possible available to performers and scholars alike.

Scholarly discourse and performance discourse largely exist in two different, even if sometimes overlapping, spheres of activity. Even though in recent years there has been an impetus to bring these spheres into closer contact, at present their respective discourses serve to communicate about quite different concerns and remain characteristically quite different. In addressing performance within a scholarly framework, a mixing of discourses is ripe to occur. Practical discourse used to communicate about sound in a given performance context may prove rather opaque if directly transferred to a scholarly context. Nonetheless, the practical discourse carries rich information about the subjects it addresses. To work with such information in the context of scholarly research, mixing the two characteristic discourses involved becomes essentially inevitable.

**Intersecting Concept and Experience**

This research takes experience as its point of departure and its main focus is on productive intersections of conceptualization and experience. Conceptualization and experience are treated as mutually definitive, where experience informs the formulation of concepts while conceptual formulations guide and structure experience. Under this view, theorizing performance involves the shaping of terms descriptive of performing experience into comparatively more comprehensive and consistent conceptual formulations. Such formulations are never intended as totalizing, final definitions of the
nature of musical performance, but rather, are offered as contributions in an on-going mutual engendering which binds conceptualization and experience in the given domain of artistic practice.

When performance comes to the fore as the subject of study in music scholarship, historically significant and still underlying (even if frequently contested) conceptual formulations of music often engender tensions. Rather than attempting to resolve such tensions from within the conceptual formulations that engender them, this work aims to circumvent them by approaching performance directly as active experience. The research frequently moves outside of music scholarship, aiming to engage concepts and practices that bear affinities with the experience of classical music performance. Specific experience of performing on the piano guides the exploration of relevant sources outside the home field. The discussion is firmly focused on a particular approach to piano playing, which primarily lends itself to discussion in terms of experience. The particular focus on the richness of sound at a pianist’s disposal foregrounds the sense of continuity in experience, as such richness is only sustainable through continual, active engagement with sound as it happens.

I consider piano playing as a highly malleable, necessarily active, and artistically significant human practice. Viewing piano playing in this way indirectly but potentially powerfully engages traditionally difficult points in the conceptualization of musical performance. The research draws significantly on positive accounts of performing experience on the piano, with the aim to articulate conceptual understandings that sustain and enhance the ability to play the instrument. In doing so, I hope to obliquely address
two related larger issues: one is the relation of conceptualization and experience, and the other is the practical implementation of that relation, or in other words, the cultivation of particular types of experience and the formulation of concepts describing this experience.
Masters of the Past: A Masterclass Story

In the course of a masterclass with a well-known New York-based pianist and pedagogue, I was told a short personal story. The story came up in the context of a discussion towards the end of my time with the established artist. The discussion was roughly about the artist’s own experience with the music of Claude Debussy, an experience which included several occasions of international recognition for the artist’s special affinity for the music of this composer. The general point the artist was making, as I remember it, was that it is essential to develop an affinity for the music one plays, and that such affinity may manifest itself in different ways that one should be careful to recognize and seize upon in the course of one’s artistic development.

The episode the artist recounted was of her own encounter with an artist of an earlier generation, someone who was part of a distinctly French school of piano playing, not too far removed from the sort of playing Debussy himself would have been likely to hear and may likely have intended to hear when composing his piano works. The present-day New York artist was recollecting a performance she heard of a short prelude by
Debussy, “Des pas sur la neige,” which made a deep impression on her at the time and remained with her to this day. On hearing this chilling, devastating rendition of the prelude, she made the decision to study this work and specifically to study it with the master who gave this unforgettable performance. The prelude had since become a special, beloved part of her repertoire, perhaps partly due to this intensely personal early encounter with the work.

At the time of the masterclass, it seemed to me that the performance the New York artist was describing was significant not only as a personal experience of a piece of music, but also as a point of contact with a tradition of piano playing that was no longer accessible. The performance she referred to was not only an example of great piano playing, it was an example of a sort of piano playing no longer available, but immensely valuable, as it was close to the source of that music, the piano tradition of Debussy’s Paris. From what I remember, I felt conflicted as to my own position vis-à-vis the episode I was hearing described. I was being made privy to this point of contact with a venerable tradition, but I was also conscious of inevitably being further removed than the artist who was speaking from the tradition to which she referred. That being inevitable, however, I did feel glad to have heard about this significant encounter. I was also conscious of the privilege of having my own performance (also of music by Debussy) coached by an artist who was not only internationally acclaimed as a Debussy interpreter, but was also part of a pianistic tradition directly linked to Debussy’s own epoch.

Thinking back, three distinct but related points can be readily articulated. First, the story referred back to a venerable artistic tradition personified by the old-school artist who delivered the unparalleled performance. That tradition was invoked (by the present-
day New York artist) as a sort of apogee of artistry at the piano. Second, the personal contact with the revered artist was a prized privilege. It opened up the possibility of transmitting experience, of sustaining some sort of continuity between the revered past, the present, and possibly the future of the art of piano playing. Finally, the vivid sense of being a part of a venerable tradition can be both inspiring and crippling. While the performance of the artist of the past was described as a sort of guiding light on a path of artistic formation, it was also described as a nonreplicable achievement.¹

Thus, while the sense of belonging to an awe-inspiring line of artistic achievement is highly stimulating, there is also a palpable weight attached to the awareness and personal experience of the unforgettable performances of artists past. In the ensuing discussion, I hope, first, to show how this claim synthesizes different important aspects of current-day experiences of tradition, and second, to foreground the inherent tension between positive (enabling) and negative (disabling) aspects of current-day attitudes and experiences of tradition.

Notions of Tradition

The concept of tradition has been a commonly addressed topic in different contexts in fields such as sociology, anthropology, history, and cultural studies, among others. However, stable definitions have proven difficult to articulate. Different research programs have developed the concept in different ways, focusing on aspects most salient to the questions a given program investigates. There are, however, overarching themes that surface commonly.

Transmission: Handing Down the Richness of the Past

One such theme is addressed at the very outset of Edward Shils’ influential book *Tradition*. Shils begins his exploration of the concept of tradition by contrasting it with concepts of progress. Progress, he argues, is almost unanimously understood as a positive force, which is to be consciously and actively sought after and maintained in the name of the advancement, be it social, cultural, economic, or other. Such active striving for change is antithetical to most common ideas on tradition. Tradition, even under only a vague definition, implies a desire to maintain or preserve, to avoid or even resist change, rather than seek it. Because the notion of progress is allied to notions of rationality and empiricism, the traditionalist tendency to resist progress has generally been understood as a backward tendency, embodying the opposite of rationality and empiricism. Thus,

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3 Ibid., 1 ff.
tradition may variously be associated with the imposition of dogma or the presence of superstition and ignorance, for instance.⁴

In articulating the antithetical pair of progress vs. tradition, Shils addresses a key part of a definition of tradition, which lies in the attitude towards change. This element of attitude, and more specifically valorization, runs through different aspects of a definition of tradition. Etymologically, the word “tradition” derives from a Latin root, generally referring to the passing down or handing of something, the transferring of possession from one person or group to another.⁵ Theologian Yves Congar articulates two related but distinct meanings of the Latin verb _trader_. One sense of the verb is to “hand an object over” or to “pass[…] an object from the possession of a donor to a receiver.”⁶ Even in this literal sense, however, the word seems to have referred to actions with symbolic meaning. The examples Congar offers to illustrate the usage of the word include the symbolic exchange of a piece of earth accompanying the transference of land ownership, or the passing of a torch between teammates in a long-distance race.⁷ In the ecclesiastical context of his work, Congar specifically dwells on the passing up of richness or wellbeing by one entity for the benefit of another. Even without this insistence on the element of sacrifice, however, the examples he cites clearly point to a layer of symbolic significance implied in the ancient-world usage of the words he cites as roots of the

⁴ Ibid., 5.
⁷ Ibid.
present-day word “tradition”. The other sense of the verb tradere suggested by Congar is “to teach,” referring to the passing of knowledge or skill from one entity to another, again as a form of gift, and again with the implication of enrichment of the receiver. Thus, the notion of tradition can include processes of trading and gift exchange, but usually in one direction, from a benevolent giver to a receiver, who may become a giver in his own right, but is never expected to give back to the original giver.

On Shils’s view, the content of a tradition may vary widely, but it is the idea of transmitting that content that defines tradition. Shils specifically insists on the passage of time as a factor in the processes of transmission, and in particular, the temporal processes involved in the handing down of content from one generation to the next. In light of tradition, the attitude towards time is particular: essentially all examples of the possible substance of traditions – artifacts, interpretations, behaviors, and more – are notions or entities which are viewed with respect or even veneration by the receivers partly because of their distance in time. In the context of a tradition, the distance in time from the origin of the perceived tradition to the present plays a role in the experience of the tradition, adding to the perceived importance of the substance being transmitted. Shils cites the Iliad as an illustration of the content of a tradition; an artifact from a distant past, the Iliad may be particularly cherished for its ancientness, as an enduring bond between humanity of ancient days and humanity today. Shills evokes the Iliad as a “traditum,” which he discusses as “the transmitted thing,” or “anything which is transmitted or handed down

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8 Ibid., 17.

9 Shils, Tradition: 12.
from the past to the present.” 10 That which is handed down in tradition, however, is not solely an object; the transmission may be of “material objects, beliefs about all sorts of things, images of persons and events, practices and institutions,” as well as “patterns or images of actions […] and the beliefs requiring, recommending, regulating, permitting or prohibiting the reenactment of those patterns.” 11

Tradition and Valorization: Patterns of Behavior

An important part of defining tradition is the understanding of tradition as “the guiding pattern” for actions and behaviors. 12 Particular patterns of action or behavior to which members of one generation adhered may be received as traditions by a subsequent generation. As such, these patterns or “models” are “usually put forth as intrinsically right” and “worthy of reproduction and persistence.” 13 An important part of experiencing these patterns as tradition is the high value placed in these behaviors, and consequently, the strong desire to reproduce them as faithfully as possible. Sociologist and historian Eric Hobsbawm specifically draws attention to a distinction between “technical” and “ideological” functions and justifications for given repeated patterns of behavior,

10 Ibid.
11 Ibid.
12 Ibid., 32.
13 Ibid.
highlighting the importance of ideology in establishing and maintaining a tradition.\textsuperscript{14}

Hobsbawm uses this distinction in large part to articulate a difference between habituated patterns of action which exist chiefly for the sake of practicality or efficiency (what he calls “custom” “conventions” or “routines”), and tradition, the latter being upheld not for its perceived efficacy but on ideological grounds. While “custom” and “tradition” may often overlap, the role ideology plays is central to Hobsbawm’s treatment of tradition.\textsuperscript{15}

As a guiding pattern for group action and behavior, tradition may become an effective tool for shaping group action and behavior. In the introduction to The Invention of Tradition, Hobsbawm specifically underscores this point by focusing attention on practices of considerable social significance, which, although often revered for their ancient origins, have been shown to be essentially the relatively recent invention of particular people with particular social or cultural programs in mind.\textsuperscript{16} If tradition supplies a “guiding pattern” of behavior,\textsuperscript{17} introducing patterns of behavior which are experienced as a tradition may induce significant socio-cultural change. A common ground between Hobsbawm’s discussion and Shils’s understanding of tradition as a “guiding pattern” lies exactly in the view of tradition as a socio-cultural force with regulative potential. Because of this regulative potential of tradition, authors of actions or ideas, which are taken to embody a tradition, may exert especially strong influence on

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\textsuperscript{14} Eric Hobsbawm and Terence Ranger, eds., The Invention of Tradition (Cambridge, UK: Cambridge University Press, 1992), 3.

\textsuperscript{15} Ibid.

\textsuperscript{16} Ibid., 1 ff.

\textsuperscript{17} Shils, Tradition: 11-15.
\end{flushright}
individual and collective experience. Actors who are seen as the bearers of tradition are often actors with strong agency.\(^{18}\)

Taken as a guiding pattern for behavior, tradition implies certain dynamics of social interaction and power. As tradition is defined by a repetition or reenactment of given patterns of behavior, the tendency is to maintain relevant social dynamics rather than challenge or reinvent them. Thus, as a social force, tradition may be viewed as conservative or reactionary, a point underscored by Shils who opens his discussion of tradition with a section he titles “Tradition in Disrepute.”\(^{19}\)

This tendency to regard tradition with a certain amount of suspicion, as an essentially reactionary force, is addressed by other authors as well.\(^{20}\) As Mark Salber Phillips puts it, tradition seems to lend itself readily to critique.\(^{21}\) What seems more difficult to capture and theorize, however, is its importance to groups and communities, its role in establishing and maintaining commonality of experience, or its persistence as a factor in social dynamics and human practices in different times and places.\(^{22}\) While repetition of some sort and a conscious desire for continuity may be definitive of tradition, neither process necessarily implies the negative connotations of reactionary


\(^{19}\) Shils, *Tradition*: 1.


\(^{21}\) Ibid., 3-4.

\(^{22}\) Ibid., 5-29.
ideology or doctrinaire social order. Rather, experiences of tradition are typically complex, and even a simplified definition of tradition as a social force, may have to contain the ambiguities characteristic of the role tradition plays in human experience.

*Tradition as “Orientation towards Action”*

French sociologist Raymond Boudon proposes different types of rationality as an important part of a sociology that takes into account individual action. Such a sociology, usually termed sociology of action, seeks to offer insights into the actions of individuals, which are seen as the constitutive basis of social phenomena:

> The first fundamental principle of the sociology of action consists in taking seriously the fact that all social phenomena, whatever they may be, are always the result of individual actions, attitudes, beliefs, and behaviors.  

> To approach the understanding of individual action, Boudon outlines a “semantic theory of rationality” to define a notion of rationality useful to the aims and purposes of sociology of action research. A semantic definition of the notion of rationality allows Boudon to distinguish between “various types of rationality” that can account for situational differences that may be crucial to understanding individual action. Thus,

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24 Ibid., 36. [my translation]

25 Ibid. [my translation]
different actions may be understood as rational in light of a particular sort of rationality, a point which Boudon illustrates by citing what he calls a classical example: sociological studies developed in the 1920’s by German researcher Max Weber focusing on habits and behaviors characteristic of large Protestant communities in the United States. Actions of members of the communities, flowing directly from belief systems typical of these communities, may be described as rational within the framework of the community. Reference to that framework may be central to describing and understanding the actions, and forms an important part of an action-sociological study of that population.

One specific type of rationality Boudon identifies is the rationality of tradition. The rationality of tradition may be evoked in different ways. Boudon describes that type rationality mostly as the absence of reasons or incentives to alter habitual action. Thus, one way to state a rationality of tradition argument would be to say that “person X had good reason to do Y, since X had always done Y and had no reason to question that practice”. But the rationality of tradition may be evoked in other ways as well. For instance, it would be possible to say that “person X had no good reason to do Y, but tradition stipulated that…”

Like other types of rationality, the rationality of tradition offers a way of understanding an action in reference to some particular situation, circumstance, or condition that shapes, influences, or determines the action.

26 Ibid., 31 ff.
27 Ibid., 37.
28 Ibid. [my translation]
Pianistic Traditions

Conceived as a sort of rationality which “orients action” within a given social or cultural framework, tradition is an important factor shaping present-day practices of classical piano performance. Boudon’s formulation of the rationality of tradition as the absence of incentives to change certain actions or the presence of pressures to repeat certain actions as closely as possible resonates well with common tropes of present-day classical piano performance. A sense of continuity through the different generations of pianists is an important value, as is the sense of personal connection to the past. Pianists of previous generations are remembered and often venerated for their achievements, which are often deemed unsurpassable, and famed pedagogues are often seen as the living connection to a glorious past. Although present-day pianists typically strive for an original personal style, rootedness in the tradition and knowledge of the masters of the past are generally expected and valued for members of the current generation. Common discourse and practices can usefully be viewed in light of a “rationality of tradition”.

Pianistic Lineage

With the importance placed on continuity and the achievements of previous generations comes a certain questioning of the present. Although continuity is arguably present on

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many levels, current day achievements are often seen as falling short of the merits of the past.

In his *After the Golden Age*, pianist and scholar Kenneth Hamilton specifically traces the long-lasting currency of the attitude of veneration of artists past and the concurrent belief in the inadequacy of the present time as compared to the immediate past. On Hamilton’s view, such attitudes have been characteristic of many generations of pianists, including many currently revered artists, all the way back to Franz Liszt, to whom Hamilton points as the inspired Romantic piano virtuoso *par excellence*.30

An important present-day notion in pianistic practice – the notion of pianistic lineage – is rooted in this attitude of veneration towards the past. Hamilton specifically explores the currency of perceived lineages linking present-day players to important figures of a revered past, most notably the figure of Liszt. Hamilton notes the convergence of many lineages on several iconic figures of the Romantic era, like Liszt, but also Beethoven, or more recently, several especially famed pedagogues, such as Theodor Leschetizky or Moriz Rosenthal.31

As an illustration of the notion of lineage in modern pianistic practice, Hamilton offers the following name chain connecting a present-day piano student to Ludwig von Beethoven, as pianist:

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31 Ibid.
After all, if Beethoven taught Czerny, Czerny taught Liszt, Liszt taught Rosenthal, Rosenthal taught Charles Rosen, and Rosen is giving a masterclass on Beethoven at your university, then how distant can we really be from a valid and unbroken apostolic succession?\textsuperscript{32}

Although Hamilton strings that chain somewhat jokingly, the discussion nonetheless serves to highlight the sort of continuities that exist in pianistic traditions as well as the perceived significance of those continuities in present-day pianistic practice. The common attitude of veneration of artists of the past lends significance to the idea of direct lineage, which is seen as a thread linking one’s own artistic endeavors to the glory days of pianistic achievement. As Hamilton points out, lineages can have many different nodes, but even when the route to the original source is circuitous, belonging to a lineage can be an important part of one’s identity, especially in music schools and conservatories.

\textit{The Studio}

Music conservatories around the world are important sites for pianistic traditions to play out and develop. A conservatory is in some sense a locus of tradition, or a microcosm where ideas of transmission and continuation of a cherished practice play an important role in social dynamics and individual lived experience.

In his ethnography of conservatory life, Henry Kingsbury analyzes several key concepts commonly circulated in different practical contexts at a conservatory. The

\textsuperscript{32} Ibid., 24. The word “apostolic” is significant, because of the connotations of the sacred. Again, an important part of the experience of a tradition is the reverence of the line of succession which ensures the transmission process.
studio is an important part of the structure of conservatory education and also an important part of a student’s conservatory experience. Personal allegiance to one’s studio may develop to different degrees and play variably important role in student experience, but when strongly developed, it often has to do with perceived lineage and a sense of connectedness or access to revered, past pianistic practices.

The sense that something of high value is being transmitted to students in a famed studio can be definitive of the studio dynamics. Cohesive and visible studios are typically ones that form around a “star teacher.” Students in such studios may often feel both stimulated and intimidated by the perceived artistic prowess of the star teacher, as well as the accomplishments of more senior students within the studio. The admiration of the past, definitive of a strong sense of lineage, can also be felt in the dynamics of a studio, as the star teacher (and to a lesser extent the senior students of the studio) provides the model that a junior studio member strives to emulate. If successful in his/her emulation, the junior studio member may feel to be a worthy continuation of a revered artistic practice.

Kingsbury quotes at length from an interview with a student who is clearly aware of feeling both proud for being part of an elite studio as well as intimidated by the expectations that his affiliation with the studio places on him. He talks of the “sense of pride that you’re with that teacher and that studio,” going on to “want[ing] to live up to

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34 Ibid.

35 Ibid., 41.
the kind of reputation that [this teacher’s] students have set before [him], to “looking up to [more senior studio members] and [b]eing in such awe of them…” In the line of transmission of high artistry epitomized in the dynamics of a famed studio, students are often faced with both a sense of pride at being connected as well as a sense of responsibility for proving oneself a worthy continuation of a prized tradition.

On a comparatively small scale, dynamics characteristic of a conservatory studio mirror the social dynamics that have been theorized as definitive of tradition as a social phenomenon. Thus, a conservatory studio may be seen as a particular instance of tradition, exhibiting the characteristic attitudes towards the past, towards change and preservation, towards transmission, and organizing practice and experience according to patterns definitive of larger concepts of tradition.

The perceived importance of continuity in pianistic practice is reflected in the very idea of a conservatory studio. An important part of what an artist-teacher offers her/his students is access to a particular perceived artistic lineage. In this sense, the clumsy but often-used designation “artist-teacher” is particularly apt. According to common attitudes, the studio artist-teacher does not simply teach students to play the piano; s/he is also presumed to impart artistic know-how, which stems partly from his/her own personal experience with artists past. The reverence towards past artistic achievement is subsumed into the idea of a studio, conceived as a site of transmission of artistry.

A masterclass, like the one described at the outset of this discussion, functions on a similar principle. The idea of transmission of high artistry is particularly present in a

36 Ibid.
masterclass situation. A masterclass is not a regular lesson; the student is expected to bring an already polished performance to a masterclass coaching. The main impulse behind the masterclass is the transmission of artistic know-how. Both student and teacher expect to concentrate on the high-art aspects of performance that characterize masterful piano playing. A masterclass is designed around the idea of passing along or disseminating the insights of an acclaimed artist. Both artist and student are aware of their respective positions in a line of transmission, a line that typically extends beyond the particular artist giving this particular masterclass. The line includes masters past, who, it is said or implied, have imparted their knowledge to the present-day masterclass artist. Having been in contact with the masters of the past, the present-day artist also enters the venerated line of tradition, but without challenging the sources of artistic authority, always understood to reside in the past.

In the context of a masterclass, both the attitude of veneration towards artistic achievements of the past and the related desire for the continuation of the revered artistic practice are palpably present. Evoking deeply affecting personal experience with artists past (as did the artist who was coaching me on the occasion) reinforces both the common attitude of veneration toward the past and the sense of connectedness in the line of transmission. It also implies a challenge to present-day pianistic endeavors to live up to their glorious past, a challenge that on some level remains impossible to meet. Seen in this light, the story offered by the artist leading that masterclass is directly in keeping with some pervasive themes in present-day pianistic practice.
Schools of Piano Playing

Different schools of piano playing – oftentimes split along national identity – boast different strengths or specialties, often with attendant vocabulary, as well as technical approaches or artistic priorities. Whether such distinguishing characteristics are indeed reflected in the playing of the pianists who receive their professional training at a given school may be an open question with no definitive answers, especially in today’s global ecology of conservatory education. However, such national or institutional characteristics do exist as a topic of discussion and a point of reference in describing different styles and approaches in classical piano performance. They are also important to an understanding of the force of tradition in classical music performance experience, as they serve as effective ways of formulating and upholding tradition in the training and formation of performing musicians.

The “Russian School” of Piano Playing

At the very outset of a presentation on the Russian school of piano playing, present-day scholar and pianist David Dubal refers to a “singing tone” as a definitive feature of that tradition. Dubal’s reference may point to the many references to sound in original discussions by Russian masters; it may also point to common audience perceptions in the West of the playing of acclaimed Russian pianists. In describing acclaimed performances by pianists of that tradition, Dubal talks of the “secret of the singing tone,” as well as the

37 David Dubal, "Russian Piano School/ Babayan, Dubal/ Russian Sundays at 92 Y," http://www.nme.com/awards/video/id/OhecoL3GAq0/search/naumov. This short video is a synopsis of an extended talk presented on December 7, 2008, at the 92 Street Y, in New York City.
“sense of heroism” and “something almost mystical” that these performers exuded from the stage. Without reading too much into Dubal’s informal presentation, it may be revealing to note the terms in which he speaks. An almost mystical and heroic presence, and sound that seems to possess the expressiveness and versatility of the human voice, are descriptions of remarkable and artistically significant pianistic ability.

Drawing on personal experience as both critic and audience member, Dubal uses these descriptions to refer to a distinct tradition of piano playing, locating sound and an uncompromising commitment to the act of performance at the center of that tradition. Dubal specifically mentions the playing of Sergei Rachmaninoff and Vladimir Horowitz, whose performances were often described and remembered as significant, even solemn, events.  

In the preface to a recent edited compilation, Christopher Barnes points out that the literature on piano playing by acclaimed masters of the art is not particularly extensive. Pianists’ discussions about their art, or insights into practical matters of piano playing are not generally well documented or widely available in print. However, he goes on to note that there exists an untranslated “body of writing on virtually every aspect of piano playing and representing the fruit of over a hundred years of accumulated experience of Russian teachers.” Many of these sources are stenographic records of

38 Ibid. Cf. also Franz Mohr and Edith Schaeffer, My Life with the Great Pianists (Grand Rapids, MI: Baker Book House, 1992).

39 Christopher J. Barnes, ed. The Russian Piano School : Russian Pianists and Moscow Conservatoire Professors on the Art of the Piano (London: Kahn & Averill, 2007), x.
master classes, presentations, and discussions conducted at different institutions. Thus, many of these sources exist in the format of conversations, or relatively short, event-specific thoughts and statements. On Barnes’ account, although largely informal, these statements do articulate an extensive, multi-faceted, but also on some level consistent approach to piano playing as an art form. Although not uniquely defined, this approach does suggest a larger tradition with some particular characteristics.

The focus on expressivity of sound in piano playing is one pervasive characteristic of that tradition. This focus emerges in statements by eminent Russian pedagogues, like Konstantin Igumnov or Alexander Goldenweiser. These pianists often refer to the sound of the piano as infinitely varied and expressive, capable of evoking the sound of different instruments, as well as the characteristics of human speech, with its full range of emotive content. The discourse employed is often metaphysical or poetic, even enigmatic, sometimes describing the experience of piano playing as a quasi-divine revelation. The same focus on the beauty and expressive richness of piano sound also permeates accounts of performing experience by pianists whose playing is often seen as exemplary of the Russian tradition, like Samuil Feinberg, Alexander Goldenweiser, and Grigori Ginzburg. The act of obtaining sound at the piano is characteristically discussed in these sources as an artistically, spiritually, and emotionally charged act.

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42 Sokolov, *Pianisti Raskazyvayut*. 
Piano sound is often discussed in such accounts through the term “intonation,” a word most commonly used to describe the inflections of the human voice. When applied to piano sound, the term “intonation” again captures the emphasis on obtaining expressive, “singing sound” in performance. This term points to an ideal, to which pianists may aspire: to effectively imitate the subtleties and expressivity of the human voice from the keyboard.43

Another, more technical characteristic of the Russian piano school concerns the use of “arm weight” in playing, which loosely refers to an experience of releasing the natural weight of one’s arm into the keyboard, or in other words, a feeling of undisturbed energy flow from one’s upper body, through the arm, hand, and fingers, into the piano keyboard.44 The technical idea of “weight playing,” discussed in different manuals and other documents, echoes the emphasis on full commitment and depth as artistic goals for the performing pianist.45 It is also linked to the ideal of singing at the piano, as it emphasizes connectedness of sounds belonging to a given musical phrase. The use of arm


44 Personal experience and communications, especially of my principal teacher, Ms. Rosetta Goodkind. As well as, for example, Sandra Sonderlund, How Did They Play? How Did They Teach?: A History of Keyboard Technique (Chapel Hill, NC: Hinshaw Music, 2006); and James Francis Cooke, Great Pianists on Piano Playing: Godowsky, Hofmann, Lhévinne, Paderewski, and 24 Other Legendary Performers (Mineola, N.Y.: Dover Publications, 1999), especially the chapters by Godowsky and Gabrilowitsch.

45 Barnes, The Russian Piano School: Russian Pianists and Moscow Conservatoire Professors on the Art of the Piano. Sonderlund, How Did They Play? How Did They Teach?: A History of Keyboard Technique. Sokolov, Pianisti Raskazyvayut.
weight mirrors phrases or other musical shapes deemed significant by the pianist, and is an important technical tool in articulating musical ideas.

French Pianism

In his book *French Pianism: A Historical Perspective*, pianist Charles Timbrell identifies some distinguishing characteristics of a French style of piano playing. He talks of “clarity, precision, moderation, and technical finish.” He cites prominent French pianist and pedagogue Marguerite Long using these descriptors, discussing a “style made up of clarity, ease, moderation, elegance, and tact. […] French playing is lucid, precise, and slender.” Although again not overly precise, these descriptors do signify technical approaches and artistic priorities distinct from the ones suggested by descriptions of the Russian style of pianism. Generally, the full investment and heroism of the Russian approach is eschewed in favor of restraint and balance by the French school.

Keyboardist Sandra Soderlund cites Nineteenth-century French pianist and pedagogue Louis Adam as specifically discouraging the use of arm weight in keyboard playing: “It is essential never to strike the key with the force of the arm, but only with the strength provided by the muscles of the fingers.” Although this citation is drawn from


47 Ibid.

48 Soderlund, *How Did They Play? How Did They Teach?: A History of Keyboard Technique*: 419.
an early treatise, dating back to 1798, it nonetheless already suggests a technical approach which resonates well with the artistic priorities of “moderation, elegance, and tact” articulated over a century later by Marguerite Long. Soderlund further cites a student of the famed pedagogue Theodor Leschetizky, writing in 1906, describing her teacher’s impressions of the pianistic styles fostered in the different schools. Pianists trained in the French School are described as “birds of passage, flying lightly up in the clouds, […] dainty, crisp, clear-cut in their playing…”49 Adam’s technical recommendation of withdrawing the arm’s weight in one’s approach to the keyboard is mirrored in Leschetizky’s evocative description of an essentially French approach to playing, which remains in some sense at the surface of the keyboard and resembles the effortless flight of a bird.

Common Origins

Although classical music pianistic traditions are rooted in Europe – and arguably link to only a few iconic artists of the past, – vibrant schools of classical piano performance exist throughout the world. Paris-based scholar and composer Lin-Ni Liao cites several statistical measures to illustrate the pervasiveness of piano courses for children in Taiwan.50 Internationally renowned conservatories in East Asia function at the level of

49 Ibid., 453.

higher education. Although in today’s climate international exchanges of both students and faculty is common, these centers have also come to develop their distinct styles and priorities, making it possible to talk of an ever-expanding array of styles of pianism. At the same time, however, there is an overarching sense of tradition, which points these multiple styles to a common origin.

Although many documents issuing from different schools of piano playing treat technical and artistic matters at length, it is not easy to specify how one would achieve the distinct characteristics of playing distinguishing the styles of one school or another. It is similarly difficult to see how pianists representing many different personalities, physicality, and musical and artistic affinities would come to share in a style of piano playing defined by subtle, qualitative differences.

However, although the various schools surely produced pianists of different individualities and musical affinities, distinct characteristics do emerge and function as useful tools of communication in discussion of pianistic approaches. These different pianistic approaches, transmitted between generations of pianists, prized for their distinctness, and offering a sense of connectedness and continuity, may be viewed as particular traditions. The differences between different schools of piano playing again highlight the role of tradition in shaping pianistic practice, since each school is in its own right a tradition with its own representative members, pedagogues, institutions, and lineages, which derive much of their influence and social importance in relevant circles in much the same ways as with other forms of tradition.

cultural practice: Liao cites figures of enrollment in piano classes which suggest that the vast majority of Taiwanese children study piano at some point of their life.
The distinctive characteristics of different schools notwithstanding, it is important to note the points of convergence of these different pianistic traditions. The schools described above all largely share in repertoire as well as important ideological beliefs. Famous pedagogues may maintain multiple studios, housed in different institutions, like for instance The Juilliard School in New York and the Paris Conservatoire. Although it is important to keep the distinctive characteristics of different pianistic traditions in view, commonalities do suggest an overarching sense of tradition. The pianism of Franz Liszt, often set as an unattainable ideal, functions as a focal point for a distinctly multi-faceted practice. In many ways, Franz Liszt remains the prototypical pianistic genius, defining the present-day ideal of concert pianism at its peak.51

**Romantic Heritage in Present-day Pianistic Practice**

In his exploration of pianistic practices, Kenneth Hamilton treats continuity of tradition as an important theme, but he concurrently focuses attention on changes in pianistic practice as they unfold over time. While insisting on the dynamic evolution and considerable variety of pianistic schools and traditions, Hamilton articulates some broad historical tendencies, foregrounding differences in styles, attitudes, and practices between Romantic and Modern pianism, broadly conceived. The distinct shifts Hamilton points

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out demonstrate the sometimes dramatic change that characterizes the evolution of even a very smoothly continuous tradition.

Although smooth lineages do not ensure unchanged practices, they do signify important connections. Modern pianism, although in many ways distinct from Romantic pianism, is still in many ways modeled on its Romantic ancestry. Although reinterpreted, concepts significant to pianists of the Romantic era exert palpable influence on the Romantics’ modern-day counterparts. Two related trends can be formulated vis-à-vis the influence of Romantic heritage on modern pianistic practices: First, there is a conscious desire for continuity, expressed in the characteristic admiration of masters of the past, and the high value placed in continuous chains of transmission. Second, this desire for continuity, however, has not meant an absence of change in pianistic practice from the Romantic period to modern days. On the contrary, there have been significant shifts in both the meaning of definitive concepts and the practices embodying these concepts. Throughout his work, Hamilton points out different ways in which practice has changed, offering concrete practical illustrations. Concurrently, concepts that arose to define the figure of the Romantic concert pianist, although often in use today, have undergone significant shifts in meaning.

In tracing the development of pianistic practices, Hamilton specifically concentrates on several concepts definitive of Romantic pianism, which find direct expression in current-day attitudes and practices. One definitive concept with both historical and current-day significance is the concept of a musical work.
The Work-Concept

Romantic Origins of the Musical Work

In her *The Imaginary Museum of Musical Works*, philosopher Lydia Goehr theorizes the emergence of what she calls the “work-concept”. On her analysis, the concept of the musical masterwork came into being as part of a larger ideology of the arts that emerged in the Romantic period.\(^{52}\) Goehr sees the rise of the work-concept as in part reflecting an impulse to elevate music to a status comparable to that of its sister arts.\(^ {53}\) The successful articulation of the work-concept depended on what Goehr calls the “separability principle,” the idea that a work of art exists independently from any functionality, its existence justified on purely aesthetic grounds.\(^ {54}\) Accordingly, music was no longer seen as accompaniment to a particular social practice or event, but – like the other arts – it came to exist for its own sake.

In order to be considered on a par with – or even a higher plane than – other arts, music needed its own *objets d’art*, which could acquire transcendental existence. The musical work became such a transcendental object. The Romantics came to think of musical masterworks as fixed and perfected entities, self-contained and fully formed by the process of composition.\(^ {55}\) Permanence became crucial to the concept of a musical work.


work, and the ideological status of perfection was assigned to music only when it could be seen to exist in the form of fully formed entities, complete in themselves.\textsuperscript{56} As idealized patterns created by the mind of a composer, a musical work could exist for eternity.

Goehr’s analysis focuses on both the philosophical development of the work-concept through the Romantic period, as well as the impact of the concept on practical matters -- like performance, the role of the written score, or concert-going experience, -- which defines the concept’s steady rise in cultural and social importance. Goehr specifically concentrates on one defining notion shaping practical matters, the notion of \textit{Werktreue}, or being true to the work.\textsuperscript{57}

Although keeping the importance of the work-concept in view throughout, Goehr highlights the concept’s historical origins as well as its cultural contingency.\textsuperscript{58} In the last chapter of her discussion, titled “\textit{Werktreue}: Confirmation and challenge in contemporary movements,” Goehr notes:

\begin{itemize}
\item \textsuperscript{55} Ibid., 161ff.
\item \textsuperscript{56} Goehr, \textit{The Imaginary Museum of Musical Works: An Essay in the Philosophy of Music}.
\item \textsuperscript{57} Goehr, \textit{The Imaginary Museum of Musical Works: An Essay in the Philosophy of Music}: 205 ff.
\item \textsuperscript{58} Ibid., esp. chapters 3 and 9.
\end{itemize}
…I hope to leave readers with the specific feeling that speaking about music in terms of works is neither an obvious nor a necessary mode of speech, despite the lack of ability we presently seem to have to speak of music in any other way.\textsuperscript{59}

\textit{The Work-concept and Its “Regulative Force”}

The work-concept came to play a crucial part in shaping and regulating multiple aspects of classical music practices. To specifically address the relationship between thought and practice, Lydia Goehr uses the notion of a concept’s “regulative force,”\textsuperscript{60} a notion which highlights the active role ways of thinking play in shaping ways of doing. On Goehr’s analysis, a statement like “…speaking about music in terms of works is neither an obvious nor a necessary mode of speech, despite the lack of ability we presently seem to have to speak of music in any other way”\textsuperscript{61} concerns more than habits of discourse; the practices this discourse describes are also heavily implicated.

In regards to performance, it was the \textit{Werktreue} ideal – that is, being “true” to the work – that gradually emerged to define the relationship between a work and its performance. Although what being true to the work practically entailed has always remained difficult to define, the notion has remained definitive in classical music reception, pedagogy, criticism, and other dimensions. Thus, the \textit{Werktreue} ideal supplied particular but characteristically abstract ways of thinking about the roles and experiences

\textsuperscript{59} Ibid., 243.

\textsuperscript{60} Goehr, \textit{The Imaginary Museum of Musical Works : An Essay in the Philosophy of Music}: 102-03 esp.

\textsuperscript{61} Ibid., 243.
of composers, performers, and audiences, eventually coming to shape virtually any aspect
of musical practice.

Goehr traces the development of tightly related, “subsidiary” concepts:

The ideal of Werktreue pervaded every aspect of practice in and after 1800 with
full regulative force. […] Concepts and ideals having to do with notation,
performance, and reception acquired their meaning as concepts subsidiary to that
of the work. […] These subsidiary concepts […] served to give a highly abstract
concept concrete expression. 62

Thus, on Goehr’s analysis, the conceptual formulation of “the musical work” has
had, and continues to have, a strong impact on how music is done by its practitioners and
how it is received by its audiences. Although it may well be a highly particular, even
idiosyncratic conceptual formulation, the work-concept serves as a catalyst for virtually
any practice associated with classical music today.

A Trajectory of a Tradition

Throughout Goehr’s analysis, a central part of her argument is that music was not always
understood in terms of masterworks. The notion of a musical masterwork, together with
the practices it engenders and supports, is analyzed as a historical phenomenon, rooted in

62 Goehr, The Imaginary Museum of Musical Works: An Essay in the Philosophy of
Romantic ideology and taking shape over a relatively extended period. Goehr presents the work-concept as a robust and enduring construction, but the historical thrust of her argument strongly suggests a continual process of development and elaboration, both conceptually and practically. The work-concept, in other words, was not always understood in the same ways, nor were attendant practices done in the same ways throughout the concept’s relatively long life.

While Goehr concentrates on the emergence and development of conceptual terms of classical music, Kenneth Hamilton focuses on practical developments having to do directly with piano performance. Both authors, however, essentially trace dynamic processes with both conceptual and practical dimensions, the dynamic aspect of the argument remaining central to the work of each.

If the focus is on performance, what Goehr calls the Werktreue ideal remains a central conceptual formulation regarding the activity of musicians, from the time of the Romantics to the current day. For a musician, being faithful to the work s/he performs has been and remains the highest calling. However, as Hamilton readily demonstrates in his exploration of pianistic practice, ideas on how one goes about being faithful to the work have shifted considerably from the time the notion of fidelity was being articulated to the present day. As an underlying ideal, truthfulness to the work, or Werktreue, is a significant concept throughout the trajectory of classical music pianism. The practice of being faithful to the work, however, has gone through some significant shifts.

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63 Ibid., chapter 3, esp.

As Goehr puts it, the Romantic Werktreue ideal “emerged to capture the … relation between work and performance,” expressed in the idea that a performance should be an “adequate realization” of the musical work.\(^{65}\) In tandem with this understanding of performance as a realization of a work there emerges the importance of the written score. Under this view, careful and exact notation becomes crucial, as it is the vehicle through which this relation between work and performance can be sustained. The fully notated score, capable of capturing and preserving the work, makes it possible to understand performance as a matter of realization only. Highlighting the rising importance of the score, both Goehr and Hamilton talk of a Texttreue ideal, expressive of the uneasy but practically important conflation of the work with its written score. As Goehr puts it, “[t]here exists a synonimity in the musical world of Werktreue and Texttreue: to be true to the work is to be true to its score.”\(^{66}\)

Although the importance of the score may be steadily rising -- throughout the development of the work-concept and associated practices, from their Romantic origins to today, -- fidelity to the score and truthfulness to the work remain closely related but also significantly different concepts; the practical implications of the ideal of truthfulness are never a straightforward matter. It is possible and quite common to speak of a performance that exemplifies the spirit of the work when it clearly departs from the written score, or a performance that dutifully follows all score indications but fails to


capture the spirit or truth of the work. However, there is again a historical aspect to the understanding of the musical score: Departing from the indications of a score has been more characteristic of earlier periods in pianistic practice than it is of contemporary practice. In present-day pianistic practice, “note-perfect” renditions of the score are typically the expected norm for professional musicians. The more elusive idea of capturing the spirit of the work has perhaps remained equally important in Romantic and modern-day practice, although ideas on how to realize that idea have shifted.

As Hamilton notes, Liszt, the legend of Romantic pianism, was specifically known for rarely following scores exactly. Yet, his performances were almost universally seen as artistic achievements on the highest level. Although his alterations of notated music – especially when significant – were viewed as objectionable by some, they were also an expected part of his pianism, and perhaps also part of his firmly established status as a Romantic genius.

In present-day pianistic practice, however, alteration in performance of the notated score of works of the standard repertoire does not occur, except perhaps in very particular situations, as warranted by performance practice research. It is not only viewed as objectionable, it is also no longer an available possibility for the vast majority of classical music performers, trained to reiterate sometimes sizable repertory with uncanny

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precision, but rarely to improvise an alternate version of a work they know intimately well.\textsuperscript{69}

In many respects, the piano playing of Franz Liszt, although often seen as the source of an essentially unbroken tradition of concert pianism, was a practice which differed significantly from common, present-day practices. The shifts in practice can be seen in light of a progressively literal understanding of the work-concept as a self-contained, fully formed, and permanent entity. With the progressively literal understanding of the musical work as an ideal form comes the desire for a progressively stricter adherence to a fully notated score. A progressively literal understanding of the work-concept can also be traced through other significant shifts in pianistic practice from the Romantic period to the modern day, which will be addressed directly below.

What is important to note, however, is that shifts in both conceptual understanding and practical habits form a dynamic trajectory of classical music concert pianism from the time of Franz Liszt to today. Throughout this trajectory, the concept of a musical work has been and remains important.

\textit{The “Music” in a Present-day Conservatory Setting}

The importance of the work-concept can be traced through common discourse and practices in a contemporary conservatory setting. Kingsbury’s ethnography of the conservatory devotes much attention to different conceptions of “the music,” noting a

strikingly high degree of abstraction. For instance, what is taught in sight-singing class is “drills,” explicitly contrasted with music;\textsuperscript{70} similarly, the “diction for singers” class explicitly excludes “musical questions;”\textsuperscript{71} and, as is frequently stated in masterclasses and coachings, “playing the notes” explicitly does not amount to “playing the music.”\textsuperscript{72}

In the context of these classes, Kingsbury finds a wide consensus on what the music is not. What the music actually is, however, remains largely unaddressed. Kingsbury notes that in different contexts, ideas of what the music is can shift widely, and a stable definition never emerges from the resources he collects.\textsuperscript{73} Paradoxically, however, despite this absence of a stable definition, Kingsbury also notes that “conservatory musicians continually referred to “the music” as though it were a constant, concrete, and unambiguous point of reference, a cultural \textit{terra firma}.”\textsuperscript{74} This observation is consistent with Goehr’s analysis of the musical work as a highly abstract but culturally pervasive entity. Although characteristically difficult to define in simple terms, the musical work is the default entity in today’s classical music culture, to the exclusion of a clear alternative.\textsuperscript{75} To return to conservatory life as reported by Kingsbury: although in discursive practice the concept of “the music” may be routinely treated as a \textit{terra firma},

\textsuperscript{70} Kingsbury, \textit{Music, Talent, and Performance: A Conservatory Cultural System}: 159.

\textsuperscript{71} Ibid., 146.

\textsuperscript{72} Ibid., 158.

\textsuperscript{73} Ibid., 140ff.

\textsuperscript{74} Ibid., 147.

\textsuperscript{75} Cf. above, \textit{Romantic Origins of the Musical Work}
in some practical situations, that point of reference may also become extremely shaky and ambiguous.

Kingsbury offers a striking illustration of that discrepancy through the personal story of a student whose standing in the conservatory is severely compromised by a jury evaluation, which stated that even though the student has a “wonderful singing voice” and is a “really good actor,” she is nonetheless “unmusical.” In addition to the difficulty of understanding the term “unmusical,” the student is further confused by the fact that during the previous year’s evaluation, the comments stated that she was very musical. The evaluation is at once unambiguous and highly ambiguous: unambiguous in the sense that it clearly discourages any further performing activity, and highly ambiguous in the sense that the student’s failings remain very abstractly described.

The inherent abstractness of the notion of “musicality” is at the root of considerable tensions facing the conservatory student. As it figures in the particular situation Kingsbury describes, such abstractness generates palpable confusion and anxiety. Although the comments on the student’s musicality reflect impressions of a particular performance, they simultaneously refer to something much more definitive: The student’s own sense of identity as an artist hinges on the evaluation of her musicality. The comments are particularly afflicting because they identify a deficiency the student cannot hope to rectify: A judgment on a student’s musicality is a judgment on the student’s intrinsic qualities. Musicality is widely understood in the conservatory as something categorically different from any learned skill or ability. As members of the

77 Ibid., 66.
faculty explicitly explained to the student, “you either have it or you don’t, and there really isn’t anything to be done to change things.”\textsuperscript{78} Such a stance enforces particular authority dynamics, that can be linked to the sort of conservatism discussed in the context of negative formulations of tradition.\textsuperscript{79}

In his analysis of the student’s situation, Kingsbury repeatedly notes that being musical, and by extension being talented, is something attributed to a performer but assigned exclusively by an outside observer.\textsuperscript{80} The student relies on outside judgment for her own – and her community’s – sense of herself as a performer. In conversations at the conservatory, the student’s performance is invariably discussed in terms of her juror’s experience of the music. The success of the performance, in other words, is judged by an experience which lies entirely outside herself. It is her jurors’ experience of the music that determines her intrinsic capabilities as an artist.

This way of framing performance evaluation in the conservatory is consistent with the \textit{Werktreue} ideal. As articulated within the work-concept, the role of the performer is that of an intermediary between the music and the listener. The mediation, however, is best left unmarked. What is seen as important is the musical work as well as the experience the work affords to its listeners.\textsuperscript{81} This ideal of unfelt, deliberately hidden mediation is expressed in the subsidiary ideal of transparency: For a performer, being true

\textsuperscript{78} Ibid., 67.

\textsuperscript{79} Cf. earlier discussion of notions of tradition, as well as Shils, \textit{ Tradition}.\textsuperscript{, esp. the opening discussion titled “Tradition in disrepute.”}

\textsuperscript{80} Kingsbury, \textit{Music, Talent, and Performance: A Conservatory Cultural System}: 68ff.

to the work meant becoming transparent, removing him- or her-self as fully as possible from the path of communication between the work and the listener receiving the work’s intimations. As Goehr puts it:

A performance met the Werktreue ideal most satisfactorily, it was finally decided, when it achieved complete transparency. For transparency allowed the work to ‘shine’ through and be heard in and for itself.\(^8^2\)

As Kingsbury’s case study demonstrates, the discussion of a student’s musical performance may essentially fail to address a student’s actions in any direct way. Within the conservatory, discussions of the student’s performance focus almost exclusively on the music, conceived as something quite apart from the performance, and thus having little to do with the performer’s actions. This tendency to address a performer’s actions only obliquely is consistent with terms of speaking about musical performance beyond the conservatory. Prominent music critic Richard Dyer uses very similar terms of speech in a Boston Globe review:

…[W]hen you hear those airchecks of Cortot playing Schumann and Chopin in the mid 50s, or when I recall the way I heard him play in class in 1961, there were those miraculous moments when […] one was suddenly in the pure presence of

\(^{8^2}\) Ibid., 232.
the music itself. With Horowitz very occasionally the mists of dubious memory and wrong notes parted, and one was in the presence of, well, Horowitz…

In accordance with the ideal of transparency, a performance is most successful when the performer’s presence remains unfelt. The performer’s actions essentially fall out of view, allowing the discussion to focus on the music – conceived as an abstract entity separate from the performance – and the audience’s experience of the music.

In a conservatory setting, an overreliance on such terms of speech may produce ambiguities that are difficult to reconcile with the overall objective of helping students become artists in their own right. However, such terms of speech are common and important in shaping the understanding and practice of classical music performance.

*Music as Masterwork, Music as Performance*

Permanence and Transience

Although coined explicitly to define the role of performers vis-à-vis the works they perform, the Werktreue ideal does not provide clear, unambiguous reference on how to best render a work into sound. Thus, Werktreue can be at once a free and open-ended as well as a constricting and even unattainable ideal. The abstractness inherent in the work-concept finds expression in subsidiary, performance-oriented ideals, such as “transparency.”

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Goehr’s formulation of the work-concept as a highly abstract entity rooted in Romantic ideology highlights the necessity of completeness in order to establish perfection. The ideological status of perfection can be assigned to music only when it can be viewed as both complete in itself and permanently fixed. Tied to ideals of permanence and transcendence, the stipulation for completeness privileges fixed state over process, which in practical terms is tied to the rise in importance of the score, viewed as a definitive, complete, and stable proxy of the self-contained, perfected work. Hence, the conceptual equivalence that Goehr notes between Werktreue and Texttreue: “to be true to a work is to be true to its score.” Music conceptualized in terms of works is in important ways a fixed-state entity, its “textlike elements” coming to the fore.

One important consequence of this way of thinking is that music begins to exist apart from performance. Only when a piece of music could exist independently from a particular performance could it be understood as a masterwork, for masterworks existed for posterity and could not be synonymous with fleeting events, open to the contingencies of varying circumstances. Under the framework of the work-concept, performance – being an unfolding act that by definition can only be viewed as striving toward but never achieving the perfection definitive of the work – always remains “subservient” to the work.


85 Ibid., 231.

Music as “Patterns of Mind”

Musicologist Suzanne Cusick addresses tensions between the concept of the work and the act of performance through the lens of feminist theory. In her essay “Gender, Musicology, and Feminism,” Cusick traces a gendered Mind/Body dichotomy historically, focusing on conceptual formulations that shaped musicology at its inception as a viable academic discipline. In these inaugural stages, independence from the practical concerns of teaching and learning to play music (what Cusick calls “woman’s work”) was a definitive condition for the emerging discipline.

Cusick’s analysis of events in history bears direct relevance on contemporary concerns. In her “Feminist Theory, Music Theory, and the Mind/Body Problem,” she focuses on the erasure of any physical involvement which characterizes musicological approaches to music: “…[A]s a musicologist, I have been formed to act on (and with?) what we ordinarily call music with my mind, and only with my mind.” She later

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89 In shaping her argument, Cusick in continuously mindful of the cultural climate of the period on which she comments. Her formulation of “woman’s work” rests partially on contemporaneous notions of gender roles and practices.

90 Cusick, "Gender, Musicology, and Feminism," esp. 477-82.

91 Cusick, "Feminist Theory, Music Theory, and the Mind/Body Problem."

92 Ibid., 9.
expands on that observation, noting that what happens often in musicology is that
“[m]usic, … is thought about as if it were a mind-mind game:”

... when we think analytically about music what we ordinarily do is describe
practices of the mind (the composer’s choices) for the sake of informing the
practices of other minds (who will assign meaning to the resulting sounds).⁹³

Part of Cusick’s argument is that if “[m]usic, … is thought about as if it were a
mind-mind game,” thinking about performance becomes difficult. Performance does not
easily lend itself to conceptualization as a mind-only activity. As an act overtly involving
physical movement, performance, so to speak, falls out of the purviews of music as a
mind-mind game. A conception of music as a mind-mind game essentially bypasses
performance, and never engages the act of making musical sound.

Cusick not only calls attention to this formulation but also begins to re-imagine it,
motivated by the inherent limitations it imposes on the sort of conceptual work she sets
out to do. She speculates that a different conceptual formulation, one which might fulfill
the “Mind/Body resolution which music promises”⁹⁴, would grow out of a “performer-
centered subject position”⁹⁵. She seems to offer this position as a likely antidote to the
mind-mind conception, at least partially because performers typically remain outside a

⁹³ Ibid., 16.
⁹⁴ Ibid., 21.
⁹⁵ Ibid., 18.
“mind-mind conception of music”96. Thus, theorizing music from a performer-centered subject position may lead away from the Mind/Body problem. The central aim of the essay, however, seems to be not so much to define this future direction for conceptual work as to sensitize its readers to the engrained presence of the Mind/Body dichotomy and its implications for scholarly practice.97

Cusick offers a wider cultural context in which she situates her discussion of practices of musicology and their difficult relation to performance. Under her analysis, the erasure of physicality in musicological formulations of music has roots beyond the scope of the discipline:

… I think there are theological, moral, and class implications to this denial of the flesh in an art which cannot exist without the flesh […] In denying the bodily actions involved in music’s existence, we [musicologists] have taken a position on one of our civilization’s most fundamental and enduring philosophical dilemmas, the so called Mind/Body problem. In effect, we have rescued music for inclusion in the realm of the privileged position.98

Under Cusick’s analysis, musicology is inscribed into much larger cultural trends and viewpoints. But musicology is not only a product of such larger trends, it may also

96 Ibid.

97 A closer consideration of the dichotomized viewpoints to the realization that performers’ mental activity is conspicuously downplayed in aligning performance with solely the bodily dimension of music.

actively shape them, and this is an important part of what Cusick’s essay effectively demonstrates. By analyzing existing conceptual formulations of music, Cusick opens possibilities for re-formulating notions of music; this may clearly impact musicological practices, but it may also impact the larger cultural trends to which musicology is tied.

Music thought about as a mind-mind game stands in an uneasy relation to performance. Cusick describes the uneasiness of that relation mostly from the position of a musicologist searching for ways to engage her performing experiences. But the questions she raises are vital from a performer’s position as well. The notion of music as something essentially body-less generates considerable tensions from a performer’s standpoint. If the acts of performers are circumvented by a mind-mind conception of music, how do these acts relate to music? If music is something other than its performance, what is the relationship between the music and its performance? Such questions have been considered in the context of philosophical studies, but they also have palpable practical relevance, as they frame the activity of performers. One way to consider these questions is as part of the larger philosophical question “what is a musical work?” Although briefly, Cusick does address this question, suggesting that the musical work is an important focal point of the musicological approaches she discusses, and one which is likely to be called into question by alternative approaches.

The *mind-mind* conception of music ("*mind* that creates patterns of sounds to which other *minds* assign meanings")\(^{100}\) obstructs the possibility of addressing performance, and not only because it dismisses physicality. In the context of imagining alternative conceptions, Cusick suggests that "this sort of [alternative, inspired by feminist theory] thinking undermines a focus on works."\(^{101}\) Cusick does not expand on this claim at length, except to suggest that a focus on works correlates with a focus on "music’s most textlike elements."\(^{102}\) Thus, incorporating performance within the purview of musicology is difficult not only because musical practice is situated on the opposite side of a Mind/Body dichotomy, but also because it is a dynamic act not easily describable in terms of textlike elements of music.

The Work-concept as Tradition

Insofar as it is a concept with palpable practical implications – one that shapes many aspects of musical practice, especially as concerns music performance – the work-concept can be considered as the substance of a potent tradition.\(^{103}\) It exerts strong pressures on performers to continue a practice as much like it has been in the past as possible. Definitive of present-day performance practices is the belief in the unmistakable, intrinsic worth of the musical work, an entity originating in the past, whose

\(^{100}\) Cusick, "Feminist Theory, Music Theory, and the Mind/Body Problem," 16.

\(^{101}\) Ibid., 21.

\(^{102}\) Ibid.

\(^{103}\) Cf. earlier discussion of tradition as guiding pattern of behavior. As well as Shils, *Tradition*, and Boudon, "Action."
faithful realization in sound has been handed down through the generations of performers who have come before.
CHAPTER II

THE INSTRUMENT: PHYSICAL AND EXPERIENTIAL VIEWS ON THE PIANO AND ITS SOUND

The Physics of the Piano: Research Questions and Approaches

Describing the Sound of the Piano: Perspectives from Physics

The piano has long been an object of interest for physicists. It is a complex instrument, with a rich sound. Building an instrument with a “good sound” has been a preoccupation of piano builders for decades, and different instrument makers have come to be known for the specific sound of their instruments. High-end instruments by current leading makers, like Steinway or Boesendorfer, typically still feature some hand-made parts and hand labor assemblage work, as well as some naturally occurring materials, most notably the spruce wood of the sound board. Thus, even the same makers often talk of subtle differences in the sound of each instrument they build, or of each instrument’s “individual character.”
The physics of acoustic piano sound production have been described and modeled by scholars, researchers and builders in the instrument production art and industry. A clear understanding of the physics of the instrument has direct relevance for instrument design, and conversely, instrument design provides empirical knowledge as well as practical insight into the theoretical understanding of the piano as a physical mechanism for sound production.

From the perspective of physics, the sound production mechanism is both simple and complex. The basic principle – of a hammer hitting a string, which is connected to a soundboard – is simple, and sound production by these means is relatively straightforward to describe from a physics point of view. The actual piano mechanism, however, features many embellishments on this simple design – like the many parts which mediate the movement of the hammer, the felt coating on each hammer, the multiple stringing of most notes, and the addition of a sustain pedal, which facilitates or dampens sympathetic vibrations to different degrees. As a result, describing the correlation between the sound, in terms of vibrations, and the mechanical motions that trigger the sound, has proven to be a complex task.

Physical Studies of Piano Sound Production

An important question to engage about the piano may be formulated thus: “What sort of hammer motion results in what sort of sound?” where sound is considered as the full spectrum of vibrations present. An exhaustive description of piano sound production in
these terms is arguably not currently available,¹ but the aspiration to produce such a description has led researchers to investigate many of the details of the piano’s mechanism, and the ways in which they contribute to the make-up of the characteristically rich spectrum of a sound triggered through an acoustic grand piano.

Predicting the spectral characteristics of a sound produced by striking a key on the acoustic piano has remained a challenging question in acoustical research.² Aspects of the sound production process which remain difficult to model include the make and consistency of the hammer, the behavior of the hammer as it approaches the string as well as its positioning vis-à-vis the string, the interaction of the hammer and string while in contact, the vibration patterns of the string as it is set in motion by the hammer, the conductance of the string vibrations through the bridge, the vibration patterns in the soundboard, sympathetic vibrations and cancellations among strings, vibrations of other parts of the instrument, and beyond that, vibrations in the space housing the instrument. Other considerations routinely emerge through further research and experimentation.³

¹ Depending on the definition of “piano sound,” there may be differences in opinion on this statement. Fuller descriptions have been formulated under laboratory settings, often using only a part of the mechanism, taken in isolation from a functioning instrument. Research done using an actual piano is generally harder to execute, and results are generally more complex.

An initial step to consider is the relation between the movement of a piano key and the movement of the corresponding hammer. In an introductory text entitled *The Physics and Psychophysics of Music*, physicist Juan Roederer directly addresses the pianist’s role in influencing the qualitative characteristics of sound heard in performance. He formulates the question in terms of a debate between two different vintage points, the artist’s and the scientist’s:

There has been a long-standing dispute between pianist and physicist about what is called “touch” in piano playing. Pianists pay great attention to the way a piano key is depressed and contend that this influences the resulting tone far beyond just determining its loudness. The physicist responds that since the hammer is on a free flight totally detached from the player during the last portion of its motion, the resulting tone can depend on only one parameter: the speed with which the hammer strikes the string. Therefore, in the case of a single tone, piano touch is nothing but loudness with a timbre that is irrevocably coupled to that loudness and the ensuing decay. … [T]one quality cannot be changed independently of loudness, and “beautiful” or “bad” touch cannot exist for single tones, says the physicist.4

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Roederer specifically notes that the physicist’s assertions concern the playing of a single tone, perhaps implying that for the playing of more than one tone, the terms of the debate might change. He also brings attention to the coupling of loudness and timbre, pointing out that because of that coupling, timbral characteristics of the sound are impossible for the pianist to influence separately from a change in loudness.

Neville Fletcher and Thomas Rossing’s discussion of this topic employs a graph that relates the “key depressing time” and the “velocity of the hammer.” The graph shows a clear correlation between the speed with which a key is struck and the resulting speed in the motion of the hammer: the quicker the attack (shorter key-depressing time), the higher the hammer velocity. During the key depressing time, the force applied to the keys is “assumed to be constant.” The graphed hammer velocities are recorded

In the same discussion Roederer also notes that “[t]here is some hope, though, for the pianist participating in the “touch dispute.” Recent measurements … have revealed that the detailed motion of the freely flying hammer as a rotating and oscillating elastic body can be slightly different for different types of touch (more precisely, for different player-controlled accelerations of the hammer prior to its release)! This could lead to a touch-related rubbing motion against the string during contact – but it has not yet been shown that this effect actually does influence in any measurable way the excitation of the string.” [emphasis in original]


independently of a contact with a string. What the graph shows clearly is a very direct correlation between the speed of descent into a key and the speed of the hammer.\(^7\)

![Graph showing hammer velocity (V sub-0) and key depressing time (T sub-s) for different values of force (assumed to be constant during the time T sub-s).](image)

**Figure 1.** Hammer velocity (V sub-0) and key depressing time (T sub-s) for different values of force (assumed to be constant during the time T sub-s).\(^8\)

However, if the sound triggered by the motions of the key and hammer is considered, correlations become less straightforward. Important factors in the sound production process include the characteristics of the hammer surface and texture, the interaction between the hammer of the string while in contact, and the vibrational patterns the impact of the hammer triggers in the string.

Over a century ago, Fanny Morris-Smith addresses the making of a hammer as an art in its own right, linking it to the “production” or “suppression” of partials in the

\(^7\) The descent into a key, or finger motion that depresses the key, will be discussed extensively later in this chapter, as well as in the following chapter.

\(^8\) Reproduced from Fletcher and Rossing, *The Physics of Musical Instruments*: 313. Graph appears originally in Dijksterhuis, "De Piano." Cf. footnote 5 in this chapter.
sound, and hence, to what she calls the “tone” of a piano. She notes that within a single instrument, the characteristics of the hammers change significantly across the registers: “Neither the striking point of the hammer on the string, nor the duration of its contact with the string, nor the size and weight of the hammers among themselves, are uniform throughout the scale in any good piano.” These considerations are similarly present and relevant today. New York-based, present-day piano technician Alex Cowell talks of work on the hammers, “prodding, shaping, filing,” as directly linked to the experience of “sound” at the piano: “If someone complains about the sound of an instrument, tuning will have a lot to do with it. But you can also work on the hammers.”

The “hammer-string interaction” happens over a period of minimal but not negligible duration; another important factor, “hammer-string contact time,” varies with the relative masses of hammer and string and the length and thickness of the string, among other factors. Although the “dynamics of the hammer-string interaction … has been subject to considerable research,” it has not been exhaustively characterized: “Analytical models of hammer behavior are virtually impossible to construct, but computer simulations can be of some value.”


10 Ibid., 63-66.


13 Ibid., 319.
(its texture, mass, etc.) and its behavior while in contact with the string have noticeable effects on the resulting sound. Such dependences are used in instrument building and maintenance: hammers characteristically have a non-uniform texture, typically being softer at the very surface and harder immediately underneath; working on the texture of the hammers often brings dramatic changes in both the sound and feel of the instrument.14

A further difficulty in describing the physics of piano sound is that the behavior of vibrations in struck strings remains only partially understood.15 Work on this relation between the striking of the string and the behavior of the resulting string vibrations has been done repeatedly since the problem of expressing the relation accurately was recognized by Helmholtz in his magnum opus On the Sensation of Tone.16 Drawing on much of this research, Donald Hall offers a series of three articles dealing with the description of string vibrations behavior in response to the striking of a hammer.17 Hall articulates “a combination of analytic and computer techniques” that allow for predicting vibrations in response to a hammer hitting a string in a some fairly generalizable cases.18


17 Ibid.
Hall, "Piano String Excitation II: General Solution for a Hard Narrow Hammer."
Hall, "Piano String Excitation III: General Solution for a Soft Narrow Hammer."

the three articles deal with different cases according to characteristics of the hammer. However, Hall makes an explicit distinction between the modeling he proposes and the case of strings of “real pianos:”

This work must not be mistaken as a theory of what occurs in real pianos. Modeling of the hammer as a pure point mass hitting a perfectly flexible string with perfectly rigid end supports is an artifice for getting a theory simple enough to be completely soluble. It is useful to treat this model at length so that it will serve as a baseline for comparison with more realistic models to follow.¹⁹

In describing the overall sound of the instrument, it is also important to note, with Fletcher and Rossing, that the “spectrum of sound radiated by a piano [is] quite different from the vibration spectrum of the string,” as it is “the soundboard [that] is the main radiating member in the instrument.”²⁰ The multiple vibrations being transferred via the bridge into the soundboard make for complex vibrational patterns in the soundboard. Vibrations interact, causing cancellations or reinforcements, continually shaping the intensities of different vibration modes of the active soundboard.²¹ The use of the pedals further complicates the live of vibrations within the instrument. Except in the bass register, keys are multiply strung – there are two and three strings hit simultaneously by each hammer for notes in the upper registers, – and each ensemble of strings, vibrating at

¹⁹ Ibid.


²¹ Ibid., 329.
very close but not identical frequencies, interact with each other as well as with other strings in the body of the instrument.²²

Some recent research into sound production at the piano specifically aims to integrate several aspects of the process into a single interactive model.²³ According to some researchers, such integration is a necessary step towards the development of a realistic model of the physical processes of piano sound production.²⁴ Focusing specifically on “hammer-string interaction,” Vyasarayani et al. suggest that a realistic model “must treat the action mechanism and string as a single system.”²⁵ This interactive model aims to take into account many of the factors at play in the acoustic piano mechanism. The authors specifically cite “[i]nitial contact time and location, length of contact period and peak force, hammer vibration amplitude, scuffing extent, and string spectral content” as some of the variables that participate in the processes they model.²⁶ Because of the complex relations between parts of the mechanism, the effort to build a realistic model continually encourages the inclusion of new variables which, albeit subtly, affect the dynamics of sound production in the acoustic piano.²⁷

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²³ Vyasarayani, Birkett, and McPhee, "Modeling the Dynamics of a Compliant Piano Action Mechanism Impacting an Elastic Stiff String."

²⁴ Ibid.

²⁵ Ibid., 4035.

²⁶ Ibid.

²⁷ Vyasarayani, Birkett, and McPhee, "Considering the Effect of Hammer Shank Flexibility Using a Multibody Dynamic Simulation Model of a Piano Action Mechanism..."
“The Making of a Steinway Concert Grand”

The complexity of the piano as a sound producing mechanism can also be illustrated through the experience and attitudes of master instrument builders. James Barron’s popular book *Piano: The Making of a Steinway Concert Grand* describes the process of building one particular instrument, offering running commentary by many of the craftsmen involved in building the instrument. At the very outset of the book, Barron introduces this central theme of his report on the Steinway pianos: “Why is one piano different from another? No one really knows.”

One theme that surfaces regularly throughout Barron’s account is that the element of anticipation remains present throughout the process of building the piano. No one ventures to predict the final characteristics of the instrument. Ultimately, how the instrument will turn out is always at least in some measure a surprise. Some part of the surprise is tied to the fact that wood is an organic material, never exactly uniform, and always in some small way individual. Barron devotes considerable attention to discussing the soundboard, linking it most directly to the particular sound a piano is said to have.

But the soundboard is not the only feature distinguishing one instrument from another. Barron describes different modes in which a piano is evaluated, but inevitably,

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with String Contact."; Vyasarayani, Birkett, and McPhee, "Modeling the Dynamics of a Compliant Piano Action Mechanism Impacting an Elastic Stiff String."


29 Ibid., xvi.

30 Ibid., 71-93.
the ultimate evaluation is simply to play the instrument, to feel the keyboard and hear the sound. A master builder can tell much about design features of an instrument by playing and hearing it, but predicting the characteristics of its sound based on the design is not something a builder does. Barron puts it more poetically: “Like all other newborns, K0862 [the piano whose creation he documents] comes with hopes for greatness and with fears that it may not live up to the distinguished family name it wears...” Even if the comparison exaggerates the sentiment, Barron’s report does reflect a sense of anticipation, which has not been eliminated even through the over a century-old experience of instrument building at the Steinway workshop.

It is worth noting that the evaluation of high-end instruments is a multifaceted task, with not only musical, but also cultural, social, economic aspects, among others. The mystique around established makers, like Steinway, is a socio-cultural phenomenon incorporating a process of evaluation that remains at least somewhat opaque. Builders, pianists, technicians, as well as pedagogues, institutions, and audiences may all participate in this process, shaping its socio-cultural dynamics. As an example, a pianist of international renown may be known as a “Steinway artist,” or Boesendorfer, or Yamaha, which commits the pianist to performing only on instruments of this particular build. The pianist thus gives his public endorsement of the particular build, which contributes to the build’s prestige; such an endorsement also means that an instrument of that build must be present in a concert hall hosting this particular artist. Beyond the

31 Ibid., 112-13 esp.

32 Ibid., xiii.
social, cultural, economic, and so forth aspects of this choice, however, it is typically at least partially motivated by a pianist’s experience of the instrument as she interacts with the piano in performance. A performance can be experienced as a demanding, even stressful situation, and the choice of instrument can feel like a significant one. Thus, even subtle differences in the characteristics of an instrument can become important in a concert experience. Hence, in practices of classical piano performance, the rigorous evaluation of any individual instrument is typically perceived as crucial, as well as to some degree impossible to fully and explicitly define.

*The Physicist and the Artist*

The mystique surrounding the special characteristics of the sound of a good instrument can be considered in tandem with another, closely related open question about piano sound production: the special characteristics of the sound achieved by a good pianist.

Research is currently underway at the University of Waterloo, Canada, on the question of whether producing a special, expressive sound at the piano is indeed a physical possibility, and if so, how. Prof. Stephen Birkett, who for several years headed

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33 For a list of Steinway artists, see http://www.steinway.com/artists.
34 Cf. for example, Mohr and Schaeffer, *My Life with the Great Pianists*.
a Piano Design Laboratory at the University of Waterloo,\textsuperscript{36} frames the motivation behind his research thus: “When you learn how to play, you learn different methods for touch […] But physicists will argue that you can’t influence anything but the hammer velocity.”\textsuperscript{37} One aim of Birkett’s work is to capture motions of the hammer with maximal precision, and thus achieve greater clarity on whether motions of the hammer may indeed be varied in ways which are not yet fully understood, but which may influence the behavior of string and instrument vibrations. Answers to this sort of questions will reflect directly on the larger question of a pianist’s ability to achieve a special sort of sound at the piano.

By contrast, design engineer Brent Gillespie cites a particular lecturer asserting that “…it does not matter how the pupil strikes the key, so long as he strikes it with the requisite degree of force. … [T]he tone quality will be the same whether he strikes it with his fingers or even with the end of his umbrella…”\textsuperscript{38} Gillespie notes that this particular lecture – delivered in 1939 in front of a piano teachers’ convention – stirred some considerable debate. Many who heard the lecture, however, apparently felt convinced that there is a real and significant difference between striking a piano key with the live flesh of a finger and striking it with the end of an umbrella. The lecture was


\textsuperscript{37} Stemp-Morlock, "Touching a Chord".

subsequently reprinted in the New York Times, accompanied by an editorial piece on the subject.\textsuperscript{39}

Gillespie himself approaches the question from the standpoint of an electronic design engineer motivated by “the desire for a certain unique product – an electronic keyboard instrument which responds, both in terms of sound and feel, just like an acoustic grand piano.”\textsuperscript{40} He reviews continuing efforts to faithfully simulate the behavior of the acoustic piano electronically,\textsuperscript{41} pointing to the experience of an extensive range of expressive possibility at the piano as the main problem facing designers of electronic instruments. As Gillespie suggests, experiences of expressive possibility are in an important sense experiences of the possibility to achieve a variety of different sound qualities: “The piano seems to reward its users with tones which vary in color…”\textsuperscript{42} Recreating this experience on a synthesizer keyboard has been the aim of many designers; as many musicians have noted, however, this goal has yet to be achieved.

To define the aims of his research and design work, Gillespie begins by articulating what he calls the “paradox” of the acoustic piano.\textsuperscript{43} The paradox concerns specifically the qualitative (timbral) dimensions of sound.\textsuperscript{44} While many pianists prize the

\textsuperscript{39} The editorial piece appeared in the section “This Week in Science” of the New York Times, on January 15, 1939. Quoted in ibid., 14.

\textsuperscript{40} Ibid., 1.

\textsuperscript{41} Ibid.

\textsuperscript{42} Ibid., 11.

\textsuperscript{43} Ibid., 7ff.
instrument and the experience of playing precisely for the expressive (timbral) possibilities at their disposal, from an engineering standpoint, such possibilities cannot be easily accounted for. As Gillespie puts it, “The engineer, whose primary interests are learning from or improving upon the piano’s design, will inevitably find it difficult to reconcile his convictions about this instrument with those of the musician, whose interests are centered around musical expression.”

To clear the way for his own work as an engineer, Gillespie makes a critical distinction between a “perceived phenomenon” and a “physical phenomenon.” Aiming to “legitimize the paradox of the piano rather than deny it,” Gillespie evokes “a tenet of cognitive psychology” which he expresses as the “proposition that psychophysical quantities may have rather remote relationships to the actual physical quantities that underlie them.” Gillespie proposes that “what the musician hears as control over timbre is effected by careful control over timing,” and develops his design based on that proposition. In this sense, explorations of how musically expressive sound at the piano is

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44 In a footnote, Gillespie explains that he “use[s] the words timbre and tone color somewhat interchangeably to refer to the frequency spectrum of a tone.” Ibid., 8. I have most often been using “sound” or “sound quality” to refer to such qualitative dimensions of sound in piano playing. Cf. “Performers’ discourse” in Part I for a discussion of this choice as well as a close look at practical usage and vocabulary.


46 Ibid., 12.

47 In addition to his own discussion, which includes suggestions for collaborative work in engineering and psychology, Gillespie also offers a literature review of “the paradox of the piano.” Ibid., 11-15.

48 Ibid., 12.
achieved offers an opportunity to consider in concrete terms the much larger issue of bringing the physical and perceived worlds closer together.

**Pianists’ Experiences of the Piano**

*A Practical Discussion on Sound*

Focusing on piano sound from an artistic standpoint gives an equally complex but distinctly different portrait of the phenomenon from the picture one gets in considering it from perspectives in the realm of physics. During a Summer Festival in Paris, directed by Dr. Philip Lasser, a composer, pianist, and professor at The Juilliard School, I was intrigued to find a “Piano Sonority Seminar” listed on the course schedule. Dr. Lasser readily acknowledged that discussing the possibilities of sound in piano playing is characteristically a challenging endeavor, and the seminar raised much interest among both performers and composers. Dr. Lasser graciously extended the discussion outside the seminar, and talked to me about his own views and experiences of piano sonority, from the dual standpoint of performing artist as well as pedagogue.

Perhaps the central conviction that emerged during that conversation is that “what makes a wonderful pianist is the sonority.” To Dr. Lasser, some pianists are especially well able to work with the dimension of sonority in their playing. He specifically cites

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Martha Argerich and Stephen Hough as examples of a “magnificent sound performer, sonority performer.” But although he sees “sonority” as central to artistic performance, Dr. Lasser asserts that “… it has been lost as a discussion.”:

[Sonority] is what people listen to when they listen to a pianist. […] They don’t know that… but when they hear a pianist who has great sound, sonority, the pianist is enchanting, you’re gripped by it. […] I remember [Stephen Hough] telling me that he worked on sonority with his teacher, it was a necessary part of learning, and I think most pianists don’t learn anything about sonority.

On Dr. Lasser’s view, despite being definitive of highly artistic playing, sonority is both commonly disregarded as a topic of discussion and commonly omitted as a focus in practice. Perhaps the chief difficulty in discussing sonority lies in a general reluctance to use the sort of descriptive language that seems best suited to addressing the topic. Dr. Lasser cites tempo, technique, and harmonic function as topics commonly addressed in practical contexts. By contrast, talking about sonority “…is impossible to do in technical terms, because it’s not velocity, it’s not quantity…,” and partly as a result of that, sonority remains “lost as a discussion.” With piano playing in particular, there has been “…the distinction, the separation between technique, interpretation, and then this nebulious, non-discussed world of sound.”

Although sound in piano playing may be difficult to discuss, addressing the topic with a group of young artists at The Juilliard School triggers rich, even if contradictory reactions.:
…What about the sonority of the opening of the *Waldstein* Sonata? … What type of sonority is it? Have you ever thought about that? – Never an answer. Can you give me a verbal [description], an image for the sonority you want to create for that opening? Then I usually get a silence. And then I say, what’s the opening chord? C major: everybody knows that. … [laugh] That’s what I mean: to me, knowing that it’s a C major triad, and knowing what color you should have for it, they should be about equal. Then what I try to do is get them to realize that they *can* say things about sonority.

…C major: where is it on the piano? … Is that gonna get you a bright sound, is that gonna get you a dull sound? What are you trying to shoot for? … So what my point is, I’m giving them two ounces of a discussion with regard to sonority, and all of a sudden, it starts coming out the discussion, that they can say a lot about it, but just never talked about it, even though they claim they talked about it. …

… Because … when I get into the language of what sonority is – is it a woody, wood-color, dark, is it sharp, is it warm, lyrical, touching, sparkling, crystalline – there are adjectives that you can at least begin to approach the discussion, and then after that there is the trying out and hearing and listening, which we spend the rest of the class doing…
Thus, the concept of “sonority” may be both highly familiar and highly unfamiliar in the professional, practical context of the situation recounted. There are no standard, widely accepted terms of discussion: communication can break down, as at the point of “never an answer,” or “I usually get a silence.” But communication can also take off: “all of a sudden, it starts coming out the discussion, that they can say a lot about it.” The concept of sonority may refer to something central to an experience of piano playing, but as the concept is not commonly used, that reference may remain obscure.

Partly because of the lack of uniform vocabulary, sonority is never unequivocally defined. A related point to note is that while Dr. Lasser returns to the term “sonority” consistently, he refers to this central topic through other terms as well, likely because they also address that focal part of experience that the concept of sonority aims to capture—“what color you should have for [the opening of the *Waldstein*],” or “a pianist who has great sound, sonority.” In the course of conversation, Dr. Lasser also refers to developing an “individual palette of colors” in piano playing, or “finding the right color” for a given passage of music; he also refers to the goal of cultivating a particular “touch,” to having a particular “approach to the instrument,” and to the “sensual experience” of making a sound at the piano. What he calls “this nebulous, non-discussed world of sound” includes a variety of terms that address, even if obliquely, a particular and significant part of a performing experience, one which Dr. Lasser aims to bring into focus through his discussions of “piano sonority.”

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50 My emphasis.
Dr. Lasser’s references to the physical experience of making a sound express a strongly perceived correlation between the sound a pianist hears and her/his own actions at the piano. That correlation is at the root of discursive habits like talking of “touch” to qualitatively describe a sound. From the perspective of a pianist in the midst of performing, sound is felt at the keyboard, as well as heard. Saying that a pianist has a “velvet touch” or a “percussive touch” is typically a comment on a heard quality of the pianist’s playing. Conversely, the physical experience of the instrument – or the experience of touch – is strongly correlated with the experience of the distinctive quality of sound that a particular touch achieves.

In my conversation with Dr. Lasser, he clearly maintains that a pianist’s way of handling sonority is clearly perceivable by an audience, whether or not that audience is aware of the subtle differences that make for an able handling of sonority. When differences heard in the sound are described as differences felt through touch, the discussion shifts slightly: differences felt through touch may be a significant part of a pianist’s experience of sound, but the aspect of touch in experiencing piano sound is not typically present for an audience. For an experienced pianist, however, the correlation between the felt and the heard aspects of the experience of sound is likely to be present whether the pianist is playing the instrument or only listening to it being played.
The early twentieth-century Russian-born virtuoso Ossip Gabrilowitsch explicitly addresses the strong correlation between the physical experience of the keyboard and the listening experience of a pianist.

There is only one real way of teaching, and that is through the sense of hearing of the pupil. [...] Those who imagine that touch is entirely a matter of fingertips are greatly mistaken. The ear is quite as important as the organs employed in administering the touch…

Gabrilowitsch does not describe the sort of hearing he has in mind in much detail, except to say that it is important. He does, however, link it directly to what he calls “touch,” and in fact discusses hearing as part of the act of “administering the touch.” By “administering the touch,” Gabrilowitsch does not seem to mean depressing the key in whatever way; rather, he is talking about a more deliberate act with some pianistic significance. He describes “touch” as a pianistic ability that fuses movements of the hand with a sort of engaged listening that directly impacts the movements at the keyboard, a specialized way of acting at the keyboard that is partially defined by listening. Thus, to “administer” a specific touch is a way of describing the act of obtaining of a specific sound, heard by the ear.

In his discussion of the concept of administering a touch, Gabrilowitsch talks of a pianist’s contact with the instrument through the keyboard. Another important point of contact between the pianist and the instrument is the pedal. Pedaling is an important topic

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in pedagogical literature on piano playing.\textsuperscript{52} Joseph Hofmann – an acclaimed figure in American pianism of the early twentieth century – links the movements of a pianist’s foot directly to listening. As with Gabriolowitsch’ assertion that what a pianist does at the keyboard is intertwined with sustained listening, Hofmann maintains that the movements of a pianist’s foot on the pedal are likewise directed through careful listening.

As a practical matter, it is perhaps important to note that, contrary to what one sees in printed notation, the pedal is very seldom used as an on-off switch, either fully depressed or fully disengaged.\textsuperscript{53} A pianist often keeps the pedal somewhere in between these two positions, and in constant flux. Hofmann maintains that “[T]he organ which governs the employment of the pedal is – the ear!” … “The ear [is…] the ‘sole’ guide of the foot upon the pedal, … the judge and the final criterion.”\textsuperscript{54} On his view, a pianist’s use of the pedal is part of his/her experience of sound.

Another early twentieth century virtuoso, Ernest Hutcheson, directly links “the ear” to “technique” through a discussion of what he calls “tone”: “[A]fter all, music is the art of the ear … and that being the case the first consideration of the pianist should be beautiful, varied, and expressive tone.” He goes on to assert that “[i]f the tone is not right, [the] whole technique is faulty.”\textsuperscript{55} Hutcheson’s account of the instrument emphasizes

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\textsuperscript{53} Ibid. Cf. especially Carreno's discussion entitled "Possibilities of Tone Color by Artistic Use of Pedals"
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what he calls the “sensitiveness of the piano,” again talking of the physical experience of the instrument as tightly linked to the experience of sound:

> It is important to observe that the physical freedom of the player is directly communicated to the action of the instrument. The sensitiveness of the piano is [...] seldom realized by the student or the public. The tone of a piano is affected by cold or heat, by dampness or dryness of the air, by its acoustic surroundings, and not least by the physical expression of the player’s mood. Treat a piano badly, and it will sulkily lock up its treasures of tone. Treat it lovingly and understandingly, and it is one of the most responsive instruments.\(^{56}\)

According to these citations, the quality of the pianist’s actions – described in terms of physical freedom, mood, and a loving attitude – interacts with the physical condition of the instrument, where both significantly impact the quality of the sound the pianist hears from the instrument. On Hutcheson’s view, “very slight and apparently unimportant motions at the keyboard affect the tonal mass.”\(^{57}\) The instrument, on this view, is highly sensitive, responsive to subtleties in the actions of the pianist, and this makes it possible to hear these subtleties of the action in the sound being made. Hutcheson also talks about a respective sensitiveness in the actions of the pianist. Subtle characteristics in a pianist’s actions are directly reflected in characteristics of the sound heard from the instrument.

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\(^{56}\) Ibid., 325.

\(^{57}\) Ibid.
This important link between the subtleties of the act and the subtleties of the sound allows the professional pianist to discern characteristics of the act in the sound a pianist makes through the instrument. Hutcheson offers an illustration through his teaching experience:

I rarely watch the fingers of a pupil, nor indeed do I watch my own fingers very closely when playing, but I listen incessantly. If I hear a particular kind of tone I know that the elbow is stiff – another kind might betray wobbly fingers, and so on.58

Similarly, Katharine Goodson – an early twentieth-century pianist, described by the Grove Dictionary as having “a great command of tone gradation”59 – states that … “[E]ar-training should be one of the first of all studies,” adding that “this should not be training for pitch alone, but for quality of tone as well.”60 She then goes on to discuss the “best known methods of striking the keys to produce artistic effects,” noting that “the artist working day in and day out at the keyboard will discover some subtle touch effects.”61 As far as teaching such touch effects to a student, she notes that

58 Ibid., 324.
59 Ibid., 143.
60 Ibid., 151.
61 Ibid., 153.
…It is impossible to show exactly how certain touches produce certain effects. The ear, however, hears these effects, and if the student has the right kind of persistence, he will work and work until he is able to produce the same effect he has heard. Then it will be found that the touch he employs will be very similar to that used by the virtuoso. … A highly developed sense of hearing is of immense value…

Even though the effects Goodson describes are “impossible to show,” it is possible to transmit the virtuoso’s know-how to the student. That happens, however, not by giving specifications for physical execution, but by having the student become engaged with sound. It is attentive listening that serves as the point of contact between the playing of the virtuoso-pedagogue and the playing of the pupil. If the student has heard the “touch effects” she wants to achieve, she can then listen for the same effects in her own playing. On Goodson’s view, it is committed and aware listening, coupled with perseverance at the instrument, that leads the student to be able to match the achievements of the virtuoso in handling the instrument.

Goodson discusses methods of striking the keys, which she also calls “touches,” as part of discussing the artistic “effects” a pianist may achieve in playing the instrument. She clearly relates the “touch” with the heard “effect,” even talking of “touch effects.” Even though it is the touch that is immediately responsible for the differences in sound quality (or “effects”), Goodson talks of sensitive listening as the first, indispensable step

62 Ibid., 153-54.
in both recognizing and producing these effects. In an important way, the “effects” are both tactile and auditory, and the way to achieve the tactile is through sensitizing the auditory, and then— with "the right kind of persistence"— developing at the keyboard the coordination between what is heard and what is sensed in the hand. On Goodson’s view, touch is taught through sensitizing the ear.

The above citations share a focus on sound, considered in tandem with a physical experience of the instrument. In an important sense, sound is described as an experience, which is both auditory and tactile (haptic). Considering a pianist’s experience of sound as both auditory and tactile provides a framework for understanding discursive practices, like the common reference to “touch” when describing a particular quality of sound heard in performance.

The “Bump”

In talking about a particular “touch,” a pianist typically refers to a particular tactile (haptic) experience at the keyboard, also associated with a particular sound. Without diminishing the importance of sound, to which it can still refer, the term “touch” points attention to the sensation of depressing a key. Certain schools and performers do devote attention to both the sensation of depressing a key and an understanding of its role in one’s interaction with the instrument. Considered in some detail, the sensation of depressing a key may become a sort of descent, or in other words, a process with very brief but not negligible duration, and some specific, discernable characteristics.
One characteristic feature of a descent into a key of many (grand) pianos is the sensation of a “bump,” a sort of breaking point about mid-way into the key-bed, giving a little extra resistance. My own teacher at the Manhattan School of Music, Ms. Rosetta Goodkind, would often insist that the bump is the place “where the sound is.” In my lesson books the same image would recur-- a picture of a piano key as a simple square, as it would look not from above, but from the side facing me. A little below the mid-point of that square, there would be a thick line which represented the place on the key “where the sound is.” An arrow from above, representing the motion of my fingers descending into the key would go just to that thick line, meaning that I would aim for that place along the height of the key in trying to produce a sound. Going past that thick line a little below the middle of the square would mean that I have missed the sound: in going past that point, I have relinquished my say in how the sound would come out.

Figure 2. Front view of a piano key, marking the area of greatest control over sound quality. From personal lesson notebooks with piano pedagogue Rosetta Goodkind, 1991-1995.

63 Numerous personal communications.
What my teacher expressed in very practical language may be addressed from a mechanical perspective by considering “the action” of the instrument. The action – “the mechanism which conveys the stroke of the pianist’s finger to the hammer” – is a part of the instrument that has undergone many changes over the centuries, and plays an important role in what an instrument feels like to a pianist. The action is a fairly complex mechanical arrangement, comprising of fifty-four individual parts for each key. How much subtlety on the part of the pianist can actually find expression in the behaviors of the mechanical parts? Does the presence of the fifty-four parts of the action suggest that piano builders have found ways to sensitize the piano action mechanism to even very subtle variations in the actions of the pianist? To what extent does the complex action of a piano allow for subtleties in the stroke to affect the behavior of the hammer and the overall sound of the instrument?

Let me consider a possible mechanical counterpart to the ideas my teacher encapsulated in her drawings. The sensation of the bump, felt at the keyboard, may be a direct counterpart to the last point of contact between the hammer and the part of the action directly connected to the key. Past that point, the hammer continues its way up to

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65 Ibid., 18-33.


67 Personal conversation with New York based piano technician Alex Cowell, January 2010. See also Christopher Smit, "The Piano Deconstructed," http://www.piano.christophersmit.com/playingMech.html; as well as Askenfelt and Jansson, "From Touch to String Vibrations."
the string on its own accumulated energy, no longer supported or propelled by parts of the action set into motion by acts of the pianist. In terms of mechanics, at that last point of contact, the hammer receives an extra impetus, which sends it into its free flight.\textsuperscript{68}

As the hammer starts its way up to the string, a small, cylindrical part of it, often called the roller, slides along the slightly curved surface of a different part of the action, called the whippen. At the end of that surface the roller meets the jack, a part of the mechanism directly connected with the key, which comes in the way of the roller. To continue its motion, the roller has to move past the jack. The resistance the jack provides makes the hammer accumulate a little extra impetus before it embarks on the free-flight portion of its motion. This point, at which the roller and the jack meet, is the point after which the mediated contact between key and hammer breaks. The unevenness provided by the jack in the otherwise smooth slide of the roller tips the hammer into its last bit of free motion up towards the string. What is important to note is that for the initial portion of its motion toward the string, the hammer is connected to the key under the pianist’s finger. The latter, free-flight portion of the hammer’s motion is set up during this initial stage of the motion, which is driven by the action of the pianist.

Naturally, a pianist is only in contact with the hammer while the hammer is in contact with parts of the mechanism linked to the key. Past that point, the pianist is no longer in contact with the hammer, and hence can add nothing to the production of that particular sound through the keyboard (although s/he can still affect the sound through his/her use of the pedal).

\textsuperscript{68} Cf. Figure X. Reprinted from Askenfelt and Jansson, "From Touch to String Vibrations."
But before this point of “the bump,” how much say does a pianist have in what sort of sound obtains from the piano? How much can a pianist influence the characteristics of the sound s/he produces in playing a particular instrument? According to my teacher, the pianist had considerable influence, and with that influence came responsibility, the responsibility to never shoot “past the sound,” to remain aware of the descent into each note, no matter how fast or loud some passage or piece may be. Unlike the motion of a metal end of an umbrella, the movements my teacher wanted me to achieve were to be always sensitive, always leaving open the possibility to feel the bump ever so slightly and descend into the key searching for that place where the sound is.

On my teacher’s view, “the bump,” which makes for a characteristic unevenness in the descent into a key, gives valuable feedback during the descent into a key that a pianist may discern and harness. Discerning and harnessing this feedback, however,

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69 Ibid., 41.

70 Cf. passage cited by Gillespie in earlier section, “The Physicist and the Artist”
required particular types of practice, which would eventually grow into habits of piano playing in general. One particular sort of practice, on which my teacher firmly insisted, can be very roughly described as excruciatingly slow practice. It amounted to slowing down a piece to a point as which the piece would be essentially unrecognizable, but I could hear out the sound of every note I played, and also make sure I am prepared to play each note before I play it. Being prepared to play a note meant having a way to play which was comfortable and gave me a sound I like in the context of the passage to which it belonged. During practice, that often meant trying out the same note, or several notes, several times, listening for a sound I liked and finding a fingering or hand position that let me stay physically comfortable.

For this sort of slow practice, efficiency was not a virtue: I was not trying to get through as much of the piece as possible. The goal was always to be fully aware of both my level of physical comfort and the sort of sound I was making. If I caught my attention wondering, I was to note down what distracts me if necessary, and only then continue. My teacher insisted that it was better not to practice than to practice bad habits. Good habits meant concentration, and the slow practice she required was a good way of keeping track of the course my attention would take. In playing that slowly, the muscle memory that develops in repeatedly playing fast passages is essentially useless. Playing that slowly, I must stay aware of each sound. I also stay aware of the ways I am using my body to make that sound, and specifically my hands. The bump is one particular anchor for my attention. In practicing slowly, that anchor can become more prominent than in faster practice. This slow practice is only one way of practicing, but it is at the core of my
teacher’s approach to playing which focused on sound in very practical ways, like this very slow way of playing a piece of music.

Theorizing First-hand Experience

Writing in 1985, musician and psychologist John Sloboda identifies a “gap” between “the vast majority of the psychological research on music” and “the experience and insight of the musician,” and accordingly, endeavors to situate his work at the intersection of psychological research and musical experience.71 As Sloboda describes it, this gap is partly due to habits, then common in experimental practice, dictating the construction of fully determined situations of limited scope in which to test experience. Experience is thus constrained by the parameters of a given experiment, and interpreted according to these parameters. Musical experience, like performance and composition, however, remains outside the domain of such fully controlled experimental situations, as it is characteristically complex and multi-dimensional.72

Since the 1980’s much new research has been developed, confronting these issues and finding new ways to circumvent the difficulties Sloboda identifies.73 Developing


72 Ibid.


rigorous research methods for studying first-hand experience is nonetheless still an important issue in music research.\textsuperscript{74}

How can musical experience become a guide for research without first conforming to the requirements of a given experiment? How can musical experience be studied without being segmented into isolated aspects, describable through the exhaustive terms of a “micro-theory”? Such questions hinge very directly on debates central to cognitive science. Since Ulrich Neisser’s 1967 book by that title,\textsuperscript{75} cognitive psychology has not remained a unified domain of research.\textsuperscript{76} The question of experience and its place in scientific study of the mind is an issue on which no wide consensus exists currently. On the contrary, that issue is the seed of some deep-seated debates.\textsuperscript{77}

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\textsuperscript{74} The issue is currently being researched at centers like the Centre for Music Performance as Creative Practice, based at Cambridge University, UK, or the Orpheus Institute for Advanced Studies and Research in Music, in Ghent, Belgium.

http://www.cmpcp.ac.uk/


In their co-authored volume *On Becoming Aware*, Natalie Depraz, Francisco Varela, and Pierre Vermersch\(^78\) explore the possibility of accessing first-hand experience for the purposes of scientific research. A central guiding impulse for this work is the conviction that accessing experience is indispensable to gaining insight into the workings of the human mind. Thus, the volume chiefly works towards articulating the philosophical underpinnings and practical implementation of scientific method that grants such access. Drawing on their work in philosophy, cognition, and psychology, the authors develop a highly particular approach to explaining their position.

The main, first part of the book is organized around the notion of “sessions.”\(^79\) A session entails the doing of something, as in the following illustration: Stereoscopic vision refers to the ability to discern three-dimensional images in looking at flat pictures often called stereograms.\(^80\) While the ability to see these stereoscopic images seems to be accessible to anyone who tries to attain it with some modest persistency, it is nonetheless not sustainable without some active intention. At a glance the images appear two-dimensional, and attaining the three-dimensional perspective is a matter of actively looking at the stereogram in a particular way. That particular way has to be discovered experientially; it has to be found as an embodied sensation. Having had the experience once, however, does not ensure that the images automatically appear in three dimensions every subsequent time one looks at a stereogram. Even while looking at a stereogram that


\(^79\) Ibid., 15-107.

\(^80\) Ibid., 46-47.
appears three-dimensionally, that appearance may waver or disappear, and have to be regained. The intention to see the images three-dimensionally has to be sustained reasserted; stereoscopic vision is a way of looking which has to be continually renewed and actively maintained as an embodied experience.

The sessions described in the book aim at illustrating a crucial difference which the authors theorize as “the difference between know-how and know-that.” The know-how of stereoscopic vision is embodied and enacted, describable only partially in terms of analytic statements formulated in a know-that mode. A session provides descriptions that invite or recall active experience. Know-how is contingent on such experience.

At the same time, as the authors maintain, such know-how, or savoir-faire, “[a]ppears to be, ever since the cognitive sciences, a contradiction in terms.” The authors address that contradiction explicitly in their discussion of first-, second-, and third-person positions. The third-person position is associated with the “standard de facto method of validation in science, […] the scientific method.” The third-person position is the position of “a detached Cartesian observer,” who strives to produce statements marked by “freedom from reference to individual experience,” and thus assumes the “objective stance.” Because the third-person position strives for “freedom from reference to

81 Ibid., 155-57. Emphasis in original. The authors quote from the work of John Dewey in their discussion of this difference. They also discuss the difference in terms of “immediate coping” on one side, and “deliberation and analysis” on the other. The reference to Dewey is as follows: John Dewey, Human Nature and Conduct (New York: Henry Holt and Company, 1922).

82 Depraz, Varela, and Vermersch, On Becoming Aware : A Pragmatics of Experiencing: 80-85.

83 Ibid., 80.
individual experience,” knowledge contingent on experience (knowledge in the knowhow mode) remains outside the purview of enquiries made from such a position. In other words, the contradiction in terms may be described as the contradiction in the desire to engage knowledge gained through embodied (and thus individual) experience without reference to such experience.

As theorized by Depraz et al.,\(^84\) the first-person position is the position in first-person accounts of singular and individual experience. The authors state that “the experiential or subjective must be sharply distinguished from the private or inaccessible,”\(^85\) insisting that individual experience can and must be incorporated into research on the human mind. In the 1980’s, Sloboda makes a similar claim in his discussion of composer’s accounts of their own processes of composition. He makes considerable use of such statements,\(^86\) advancing the view that there is ample reason to “treat verbal reports as reliable indicators of cognitive processing”\(^87\) that constitute a “vast storehouse of psychologically relevant data.”\(^88\) He also offers a discussion of what he calls “protocols,” or “verbalizations made concurrent with the act,”\(^89\) the most extended one being of his own act of composing a choral work.\(^90\) Although in the

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\(^{84}\) Ibid.

\(^{85}\) Ibid., 80.


\(^{87}\) Ibid., 122.

\(^{88}\) Ibid., 123.

\(^{89}\) Ibid. Emphasis in original.
concluding paragraph to the discussion of the self-generated protocol Sloboda states that “protocol gathering […] does not, on its own, allow detailed theory building and testing,” he does include personal, experiential accounts within the scope of his work. His desire, stated from the opening pages of the book, to work toward bridging the “gap” that he saw in the mid-80s between “psychological research on music” and “the experience and insight of the musician” leads him to engage with individual, subjective experience. Engaging such experience necessitates the shift away from a strictly defined third-person position that seeks to eliminate reference to individual experience, to a position that places such experience as central. Sloboda’s means to engaging such experience is the use of “verbal reports.” Although he stresses the need for “a clear understanding of the conditions under which they [verbal reports] tend to be unreliable,”

Individual experiential accounts are made from what Depraz et al. call the first-person position. In incorporating such accounts into his work, Sloboda introduces this first-person position into the range of available perspectives that he uses in his work. This move to include experiential accounts in research which aims to engage particular experience resonates strongly with the main argument articulated by Depraz et al. for the need to find adequate means of engaging experience into cognitive research. While incorporating experience into research on human ability may be recognized as important, it is also often recognized as problematic. Depraz et al. concentrate exactly on the

90 Ibid., 125-38.
91 Ibid., 138.
92 Ibid., v.
conceptual and ideological roots of that difficulty. Focusing attention on this difficulty is a vital step toward developing research programs that may go beyond it.

Incorporating experience into a research program may mean compromising the third-person position of making research statements. Compromising the third-person position as theorized by Depraz et al., however, does not constitute a compromise on the rigor of the research program. On the contrary, putting pressure on a traditionally prevalent research position may be indispensable to exposing biases and limitations inherent to it. Approaching research from a third-person position significantly affects the scope, direction, and even subject matter of that research. As Sloboda’s discussion of “a gap” between research and experience in studies in music psychology illustrates, a third-person position, which characteristically obstructs or even bars access to experience, may be counterproductive to some important inquiries.

In the end, research on performing ability cannot usefully be kept separate from performing experience. And focusing on performing ability, which cannot be well described without recourse to experience, forces the inquiry away from a third-person perspective. Individual experiential accounts become central primary sources on which to develop theoretical work. An important part of the theoretical work, however, hinges precisely on this shift of orientation away from seeking “freedom of reference to individual experience”93 toward moving individual experience into the center of research activity.

93 Depraz, Varela, and Vermersch, On Becoming Aware : A Pragmatics of Experiencing: 80.
CHAPTER III

A PERFORMER AT THE PIANO: INTERSECTING PHYSICAL WORLD AND PERSONAL EXPERIENCE

Sound as Act: Developing “Thick Descriptions” of Pianistic Experience

Obtaining the Right Sound

In an essay titled “Coping with pianos” Alfred Brendel assures us that “anyone who has ever traveled with a piano knows that the same instrument not only sounds different in different halls, it even seems to feel different in its mechanism…”¹ Although Brendel himself finds this to be an odd assertion, it nonetheless describes a situation he has commonly encountered. Even more strikingly, the difference in the feel of the instrument can manifest itself in the same space and on the same day, between the afternoon rehearsal and the evening performance. In this case, the only change in conditions is between the performance space being empty in the afternoon and full in the evening. Acoustically, the difference that the presence of a sizable audience makes is easy enough to appreciate, but what about the attendant difference in what the instrument feels like to the pianist? In Brendel’s case, the instrument is the same one the pianist has brought along on his tour, and Brendel is clearly not referring to the sort of difference a

technician’s intervention can make. Rather, his remarks imply that even a subtle difference in the acoustic conditions somehow finds expression in the pianist’s experience of his instrument.

How is it that a change in the sound a pianist hears is also felt at the keyboard? What are ways to understand and appreciate the sort of difference Brendel points out? To explore such questions, I turn to some personal performing experience.²

Although I have never traveled with my own instrument,³ I have had the much more common experience of anticipating, sometimes anxiously, the first contact with a new instrument. Getting a sense of that new instrument (and concurrently the sound of the space) might require playing only a few sounds, but these few sounds, importantly, “tell” me a lot about how the sorts of things I do in playing the instrument are going to sound under the current circumstances. After having heard what my actions sound like in this particular situation, I can actually effect some adjustments in how I go about playing in the performance.

Adjustments that pianists may effect during a performance, in part to accommodate acoustic conditions, may be described in multiple ways. Common ways of addressing real-time adjustments may include discussions of adjustments in the use of the


³ Even for world renowned pianists, the practice of traveling with one’s own instrument is generally less common today than it may have been in a slightly earlier period. Vladimir Horowitz was one iconic figure at the piano who famously did travel with his own instrument and technician. Cf. Mohr and Schaeffer, My Life with the Great Pianists.
pedals, adjustments in tempo, or in dynamic levels, especially when balancing multi-
voice textures. Different instruments and acoustic conditions may require a pianist to
make adjustments in these or other areas of his or her treatment of the instrument and the
performance situation.

However, my focus will be on adjustments in sound quality, adjustments
experienced at the keyboard (and pedal) but also as the distinctive characteristics of the
sound being produced in the very circumstances of the current moment of performance.
Below is an example of what I mean.

On Practicing the Opening of Debussy’s “Des pas sur la neige”

Debussy’s Prelude No. 4 in Book I, “Des pas sur la neige,” is relatively very simple to
sight-read. On a first glance at the score, the only arguably unusual feature is the very
precisely notated rhythm of the two-note figure, which recurs throughout the piece.  
Keeping this rhythm precisely executed might require some special attention in going
about playing the notes of this score. But this two-note figure is in fact visually the
busiest feature of the score, notated as it is with the use of multiple slurs. The rest of the
score is relatively bare, deceptively simple. However, from the very beginning, playing
the very few notes of this slowly unfolding piece presents a challenge that would be far
too prosaically characterized as a task of playing all the right notes at the right time. In a
way, because there are so few notes to be played and each one sounds for a relatively

\[^4\] Cf. Figure 4.
very long time, it becomes especially important to pay particular attention to the particular sound of any one note one plays.

Although this is a challenge that is not directly apparent in looking at the pitches and durations on the page, it is nonetheless reflected in the score. Especially at the beginning of the piece, there are many more expressive markings than notes for the pianist to contend with. Starting from the tempo indication of “Triste et lent” (Sad and slow) which refers as much to a mood as to matters of relative duration; going on to the swells in dynamics, the portamenti, the polyphonic voicing, the evocative text (“Ce rythme doit avoir la valeur sonore d’un fond de paysage triste et glacé”): the pianist is asked to do a great deal, and there are remarkably few notes to do it with.

Figure 4. Opening three measures of Debussy’s Des pas sur la neige.

What follows is a reconstructed and synthesized account of my first experiences of playing from this score, in a practice session. It is worth noting that I had often heard this piece (as well as plenty of other piano works by Debussy) performed, and even
though I may have been looking at the score for the first time, I brought to this first “reading” a conception of how the piece should sound.

Starting to play this piece, I am immediately going for a sort of sound I could imagine quite clearly. Since I already have a conception to go on, I could simply play the few opening notes and listen. As I listen, I compare the sound I hear to the sound I thought I imagined for this opening. As I listen to an actualized sound, my imagined sound becomes more and more vivid. Am I hearing a sound I like for this particular opening?

If I become unsure, I look to the score for any indication that might help me refine my imagined sound for these notes. In this sort of search, the evocative text descriptions, the dynamic swell over two notes which culminates after the onset of the second one; the voicing of these two notes as two separate lines and the portamento marked over the first one (which the dynamic swell would suggest to be the softer one of the two)--all of these partly contradictory indications can actually be helpful, as they suggest something (many things in fact) to listen for in the sound of these very few notes.

I try listening for a more insistent second note in the opening gesture, then less so the third time the figure comes in, to open space for the entrance of the right hand melody. Then I try listening polyphonically, to two lines unfolding simultaneously. Then I try thinning out the sound of both lines, reflecting my impression of the word “frozen” in the text. “Sad and frozen,” however, suggests to me some warmth, or in terms of the sound, a little more fullness to listen for.

Although I cannot describe the differences I hear in terms of relative changes in volume or duration, and of course, I could be only imagining them, some of the sounds I
make do sound more “right” to me than others for this particular opening. But something else happens as well. As I listen for the differences in sound, I also feel these differences in the ways I go into the keyboard, and my foot on the pedal is also helping me in my search for the right sound for these few opening notes. As I listen, I am also getting to know what the sounds I like feel like at the keyboard and pedal. As I listen to my different renditions of these few notes, I get familiar with what playing this piece in a way that I like feels like under my fingertips. Little by little, I begin to feel comfortable with playing these opening gestures--first, because I develop an ever more vivid sense of how I would like them to sound; but also because I develop an ever more vivid sense of what making that sound feels like.

Audio-haptics: An Experienced Merging of Sound and Act in Piano Playing

But what have I achieved at the end of a practice period in which I have found a sound I quite like? One way to rationalize my activity is to say that after having practiced this way, I now know what to do in order to get the sound I want. Thus, I should conceivably be able to execute the same motions in a subsequent performance and get the sound I aim to get for these opening notes.

However, that rationalization does not correspond to my experience. In going to a different instrument, in a different space, as well as in a different state of mind and/or body, I cannot reliably execute the same motions to obtain the same sort of sound. Focusing on the physical movements that would have been involved in obtaining a sound I liked on a previous sitting does not particularly help me in obtaining a similar sort of
sound in a new situation. This being the case, how can the previous practice session have been useful, and perhaps more importantly, how could I expect to obtain a sound I like in any new performance situation? Or, recalling Brendel’s essay, how can a pianist ever expect to get the same well-rehearsed results in performance when the circumstances one faces in any given performance situation may be quite different, even if one travels with one’s own piano?\(^5\)

My own experience has pointed me towards the following proposition: Over the many hours, days, and years of practice, a piano-specific sensorimotor ability develops which can be described as a very tight correlation between the sound that a pianist hears and the feeling of making that sound through the instrument. Because the sound is always coupled with the feeling of making it, the two become very closely associated and come to be experienced as inseparable. If the audio and haptic (tactile, kinesthetic) aspects of the experience of playing are very closely allied, then an experienced change in one aspect will also bring about an experienced change in the other. Thus, a change in the acoustic conditions of a performing situation, which will be experienced as a change in the sound, will also be experienced as a change in the way the instrument feels. In a new set of acoustic conditions, making a particular sound (even on a familiar instrument) will correspondingly feel differently.

“Coping with Pianos:” Improvisatory Aspects in the Performance of Classical Piano

Repertoire

Under a common attitude in classical piano performance, also evident in Brendel’s discussion, changes in performance conditions are viewed as undesirable. The very title of Brendel’s essay, “Coping with Pianos,” already suggests an undesirable situation: “coping” is what one is forced to do when faced with less than optimal circumstances. Pianists continually have to contend with different instruments that may be in varyingly good shape, and even when in good shape, these instruments still have their individual feel and sound. Thus, playing the same repertoire on two different instruments might require the pianist to go about playing quite differently, even if intending to present the same or a similar rendition of that repertoire. To minimize the effect of this sort of contingencies, one could conceivably tour together with one’s own instrument or perhaps even with one’s own trusted technician. But on Brendel’s account, the contingencies still persist. In the full hall, the pianist hears that the sound is quite different from what he has heard in rehearsal, and furthermore feels that his piano is behaving quite differently as well. Even with considerable care, the effort to exactly reproduce performing conditions can be only partially successful. As experienced by the pianist, the circumstances of performance are – even if ever so slightly – different every time.

However, there is a flip side, which may be formulated thus: A strong coupling of the auditory and haptic aspect of performing experience opens a valuable conceptual and experiential possibility--namely, that pianists perform haptic adjustments according to

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6 Ibid.
their auditory experience. Or conversely, pianists may listen differently, according to their haptic experience. In very practical terms, this means that close listening may be experienced as a way of guiding the physical movements at the keyboard and pedal--and that guiding the physical mediates pianistic listening. In practicing the opening of “Des pas sur la neige” I listen for a sound I like, but that sound is also a sensation in my body, it is a way of experiencing the instrument. Thus, closely listening for a particular sort of sound can be experienced as a comfortable and reliable way of actually obtaining such a sound. For an illustration, I will return to “Des pas sur la neige,” this time to describe a moment in a particular public performance.

On a Specific Performance of Des pas sur la neige

The performance is in a small space. The stage in particular is walled in on all three sides, and not that much wider than the 9-foot Bechstein grand that it features. The piano itself is very distinctive. It has a particularly shimmery sound; the keys have a shallow amplitude and feel like they would pick up on even the slightest motion over the keyboard. Perhaps partly because of the size of the hall, the sound of the lowest register in particular feels perhaps disproportionately big, but also awe-instilling. Depressing one of the lowest keys on the keyboard and letting the sound ring, really gives a sense of a large, vibrating body, of something powerful, even unstoppable, being set into motion.

In the context of “Des pas sur la neige,” two of the lowest notes on the keyboard are indeed called for, but within that piece, I need these low notes to sound radically different from the powerful ring I just described. As part of the piece, I do not need the full, awe-instilling resonance, which comes so easily in this particular situation. Instead, I
would like the two low notes to sound tentative and distant. The two notes to which I am referring appear about midway through “Des pas sur la neige,” at m. 15, a moment that marks a big point of articulation in the piece.\footnote{Cf. Figure 6.}

Figure 5. Measures 12-15 of Debussy’s Des pas sur la neige.

In my conception of the prelude, that point (at m. 15) has long been a sort of tapering off of the first (roughly) half of the piece, a place where the piece could have “run out of steam” and fallen into silence. For a long time I have in some way or other liked to keep that possibility open, the possibility that the piece could trail into nothingness and perhaps not pick up again. Looking at the score, there are numerous observations I could make in support of my idea of a tapering off at the end of m. 15. First, the tempo is close to disintegrating at this point (the indication “Cedez” appears two measures earlier, and “Retenu” appears over that particular measure). The semblance of a melodic line, which had appeared in the left hand four measures earlier, dissolves at that point. Now, there are three decrescendo marks and a pp in the previous two bars, and progressively fewer notes to play, until in this 15\textsuperscript{th} measure, only two low,
left-hand notes remain, stretching perhaps beyond recognition the already very slow quarter-note pulse.⁸

Figure 6: Measures 12-15 of Debussy’s *Des pas sur la neige*: The low C in mm. 14-15 is part of two different musical gestures: the two-note rhythmic gestures which recur throughout the piece (boxed in blue), and the three-note chromatic descent which articulates the mid-point of the piece (boxed in red).

While playing the piece, however, none of these observations typically comes to mind. What I do have instead—that night, on the rich, concert-size Bechstein as on other occasions—is this sense of a possible dissolution, of the sound trailing off into silence. As I near these last two low-register notes in m. 15, I listen, as these two low sounds finish off a three-note descent, the first note of which has already been sounding for some time.⁹ When it came in, the top note of a three-note chromatic descent (the second low C-natural in m. 14) was part of the recurring short-long rhythmic figure that pervades the entire

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⁸ Again, m. 14 looks busier on the score than it sounds, because of the multiple slurred notes in the two-note figure.

⁹ Cf. marked excerpt directly above.
piece. In the context of the recurring two-note figure, that low C does not sound as a beginning: it is the second one of the two notes that form the figure, and on that particular iteration of the figure, that second note is especially de-emphasized. There are factors that can explain this de-emphasis; for instance, it helps to avoid an over-articulation of the short value in the pattern, and thus helps to keep the overall texture smooth. It is also in keeping with the decrescendo hairpin – but the “reasoning” that I take with me when playing is of a more overarching sense of winding down the music.

As I listen in the beginning of m. 15, that second note of the two-note pattern (the low C), which came in as a de-emphasized, low-profile note, has to start sounding to me as the top note of a descending line. When I hear that line, I start having a clear sense of what sort of sound I would like the next two low notes to have (the low B, and B-flat in m. 15). There are occasions when it is quite difficult to say what I do differently when I listen for things differently, but in this particular occasion that is not so much the case. While I listen, my foot on the pedal is making plenty of adjustments: it is shaping the resonance by moving ever so slightly up and down, both damping and trying to retrieve some part of the resonance, as the sound continually evolves.

At the end of m. 14, there is quite a lot of sound, especially for this consistently quiet piece. Although the dynamic indications cast this as a particularly soft moment, the texture is thick. Before I can feel ready to bring in the two low notes in the second half of m. 15, I listen to hear the low C ringing more or less alone.

The notation in m. 15 (specifically, the quarter-note rests in the top strand of the texture) suggests a particular course for the pedaling, which is to clear the pedal on the first beat, and then again on the third beat, finger-holding the notes that should be left
ranging after each clearing. If the pedal is fully let up on the first and third beats of the measure, that action would clear all the sympathetic resonance that a fully or partially depressed pedal may otherwise allow.

Especially on a rich Bechstein in an intimate space, this approach would give two abrupt cuts in the sound, which is something that I could not reconcile with my sense of gradual and almost total dissolution of sound. Fully lifting (clearing) the pedal would also very drastically cut the ring of the low C. Instead, what I listen for through the beginning of m. 15 is exactly a gradual tapering off of the sound from the end of m. 14. As sounds in the upper registers taper off faster than the lower register ones, all I have to do is help this natural process, and listen as the right hand octave fades almost completely, followed gradually by the other sounds, except for the one I still hold on to at the keyboard, the low C. While I adjust the pedal to clear more and more of the upper sounds, my low C also suffers, losing its resonance and becoming thinner and thinner. As I listen to the tapering off in the upper registers, I also listen for the resonance of the low C, which is to say that I am most likely never letting the pedal up completely, since doing that would fully dampen upper register shimmers which enrich the sound of my low C.

Listening to the ring of the low C, I can now hear it connect into the B that follows it. When I know what to listen for, I go into that low B, and then into the B-flat that follows the B, again listening for the sort of sound that makes these notes connect into each other, and form a descent that tapers into the brief moment of silence I listen for before going on to the music in m. 16.

What I do in a given moment of performance like the one just described is strongly conditioned by previous experience, especially the experience of practicing that
particular piece in the days or weeks leading up to the given performance event. However, in the moment of performance, there is still, of necessity, significant room for maneuvering. The particularities of that given performance situation – which features a particular instrument, a particular set of acoustic conditions, as well as a particular state of physical and mental being on my part – necessarily demand real-time flexibility in performance.

As classical piano performers, we tend to want to fix our “interpretation” of a piece as fully as possible during our private practice, aiming to present publicly a rendition of the piece that adheres as closely as possible to the privately rehearsed one. However, as Brendel’s remarks suggest, the exact same circumstances cannot be hoped for, even if one can afford to invest considerable effort into trying for them. Instead, what happens during performance is perhaps better described as real-time adjustments, or even a form of improvisation, which becomes an integral part of a classical pianist’s act of performance.  

The Act of Going into the Key: On the E-flat from the Opening of Debussy’s “Ce qu’a vu le vent d’Ouest”

The following discussion presents a particular view of the act of playing a note in performance, focusing on what I’m portraying as the “descent” into a key on the piano keyboard. By “descent into a key” I mean covering the distance from about when the finger meets the surface of the key to about when the key no longer gives, since the key

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10 Brendel, Alfred Brendel on Music: 335-47.
bed has been reached. The discussion presents this descent as an eventful act whose
dynamics are manifested in the sound heard from the instrument. These dynamics unfold
on a very short time-scale, but under the present view are understood as the site of a
particular pianistic skill that is most readily described as a sort of access to what is heard
as qualitative (coloristic) dimensions of piano sound. The discussion presents a view of
how a pianist’s way of depressing a piano key has a significant impact on the sound,
specifically on the sound’s finer characteristics, which are mainly experienced as
characteristics of tone quality or color.\textsuperscript{11}

The particular key stroke I am about to describe is the stroke of an E-flat that
appears in the third measure of Debussy’s Prelude No. 7 in Book I, “Ce qu’a vu le vent
d’ouest.” The reasons for focusing on a note from within a musical composition are the
same as in the discussion preceding this one—namely, that the sense of a desired quality
for a given sound is tied to the artistic sense of the music that this sound is a part of. On
the view presented here, since having a vivid sense (image)\textsuperscript{12} of a sound plays an
important role in obtaining that sound, the musical context of a sound permeates that
sound and becomes an indispensable presence, even when the focus is explicitly on that
particular sound.

\textsuperscript{11} As discussed in Chapter 2, this statement may be at odds with physical descriptions of
the piano and its sound. The statement is made from a pianistic standpoint, and unpacked
from that perspective. It is not meant to contest a physicist’s assertion that what
determines the characteristics of the sound is ultimately the speed of the hammer. Rather,
it is intended to highlight the essentially limitless range of subtleties, which may
characterize the experience – both haptic and auditory – of obtaining a sound at the piano.

\textsuperscript{12} Cf. discussion of the “artistic image” later in this chapter.
Like most of the sounds a pianist makes in playing a piece, this particular sound (the first E-flat in the third measure) appears in the midst of others already sounding. But it stands apart from the texture of the sounds already sounding at that moment in the piece. That standing apart is indicated in the score by a stem-up, which gives the E-flat a relatively long duration and introduces it as a new voice. There is also a portamento mark over that note, as well as the direction to play it with the left hand, which is another way of setting it apart, as the rest of the sounds around that E-flat are played with the right.

Treating that E-flat as a sound to be set apart from an already established texture is already an act of musical interpretation. Setting the E-flat apart is not synonymous with playing that note longer or louder (or both) than the thirty-second notes around it. In fact, the score indications already suggest that difference. Although the eighth-note stem indicates a value of duration, in sounding that note it can only be taken as a rough
suggestion rather than a precise direction. Although there are no indications of pedaling, the low F-sharp half note in the bass can only be kept sounding for its entire duration by the use of the pedal (as the left hand is recruited for the E-flat, some three octaves higher during the duration of that half note). If that half note is to be sustained, the eighth-note value of the E-flat cannot be executed exactly, as a pedaling which sustains the low F-sharp for its full duration will also sustain the E-flat past its indicated duration.

However, this ambiguity in notation is hardly noticeable when playing from the score. As the pedal is at least partially depressed for the two beats spanned by the lower F-sharp, the eighth-note stem up cannot be literally taken as an indication of duration. It can, however, be taken as an indication of a sound which is new and different from that of the fast, arpeggiated figures around it. Although the E-flat is registrally bunched together with the upper notes of these figures, it introduces a different voice, coming from a different place sonically.

This different sonic place is not synonymous with a difference in the loudness of that E-flat, although some such difference may be part of creating this new sort of sound. A difference in loudness is perhaps obliquely suggested by the portamento mark over the note, but the portamento mark may be not so much an indication of greater volume as an indication of lengthening. As such, it may even be seen as redundant, as the longer note value is already indicated by the eighth-note stem over the note. The lengthening of a portamento, however, is particular: it indicates urgency or insistence, a sort of highlight. Without giving precise directions on volume or duration, both the portamento mark and the eighth-note stem-up pull the E-flat out of the texture around it. That E-flat is marked
out in the score as a special note, not necessarily louder and not necessarily longer than the sounds around it, but nevertheless, set apart from them.

What can a pianist do to sound that note accordingly? Under the present view, a crucial part of the act of the pianist has already been the subject of description in the paragraphs directly preceding this one. A vivid sense of the sort of sound appropriate for this E-flat is an important part of obtaining that sound from the instrument. To unpack this view, I am going to focus on a synthesized account of the contact with that key (the E-flat above middle C) in the context of playing this piece on a grand piano in a large classroom. (The reference is to a particular space where I have been practicing during the rough period of writing this account.)

In this description of the act of obtaining a given sound, the sustain pedal constitutes an important point of departure. Like movements at the keyboard, the use of the pedal is strongly conditioned by that sense of the musically appropriate sound for a given note. The central importance of that mental act notwithstanding, an action at the pedal often sets the scene for an action at the keyboard. What is important to stress at this point, however, is that the time-scale of the sort of descriptions offered here is very small. Talking of an action as preceding or succeeding another is not a way of designating a distinct sequence, and should not be read as a mapping of a series of sequentially experienced events. Rather, it is a way of zooming into an intricate act and offering a detailed description of microtiming possibilities that may be part of a pianist’s way of interacting with his instrument.

Under my current rendition of this prelude—which aims at shapes and gestures—the sustain pedal is at least partially engaged through most of the opening of the piece.
The instrument and space I have in mind for this description allow for this sort of treatment. Engaging the sustain pedal—especially with the rapid, low-register flourishes of this opening—means that there is some residual ring throughout these few bars of music, which provides a continuous sonic background. This residual ring is also tied to the idea of bringing the E-flat in, as if from a different sonic space. However the thirty-second note flourishes that open the piece were shaped, by the time the E-flat comes in, they have begun blending into a relatively consistent texture. The use of the sustain pedal is crucial to establishing this opening consistency and setting up the particular sonic context that the E-flat is brought into.

Thus, under my current rendition, the E-flat is conceived as a new sort of sound. However, that newness is not categorical. The E-flat is a new element, which is to be woven into an existing texture. This flip side (like the idea of setting the E-flat apart) is also indicated in the score: The E-flat is not marked with a new dynamic or an accent. It is set apart in all the ways discussed earlier, but included under the arch of a slur spanning each thirty-second-note flourish of the opening of this piece.

To bring in the E-flat as a sound set apart from the surrounding sounds but not out of the context of this opening, the E-flat needs to have a ring of its own, without necessarily coming in any louder than what the thirty-second-note flourishes have established. Getting this to happen is connected to the use of the pedal, although in an indirect way. Feeling my way into the key (the E-flat) is different with the pedal engaged than it would be with the pedal released. I set up the E-flat by giving it a practically fully depressed pedal, something I do not do for the thirty-second note flourishes when they are on their own in the previous two bars.
With the intent to obtain a ringing sound with the E-flat keystroke comes a particular pedaling behavior. This pedaling behavior, however, is part of the larger act, the act of going for a particular ringing sound. It is so smoothly integrated in the larger act, that I only noticed it in the process of working on this description. On its own, such pedaling behavior does not create conditions that invariably lead to a ringing quality in the sound of a keystroke. It does, however, figure prominently into the act of obtaining this intended sort of sound. The sort of sound I intend for this E-flat is only possible with the use of the pedal, both for setting up the keystroke and for sustaining the sound after the keystroke.

Having a clear intent to obtain a particular sound mobilizes a particular action at the pedals, as well as directing particular actions at the keyboard. The E-flat in the third bar of this piece is somewhat unusual in that it is a single note which calls for its own gesture, i.e. the left hand reaches over the right for only this one note, and then returns to its previous position for the low-register part of the running thirty-second-note flourishes. The intent to obtain a particular sound with this single keystroke guides the gesture and organizes the hand in a particular way. The gesture is economical: not too high, relatively quick, but free and relaxed; these are all ways of making sure that I get to the E-flat with enough time to organize the stroke and that when I have arrived my hand is supple and flexible. The hand is compact, organized around the third finger, which is about to play. Both the gesture that carries the hand over and the overall feel of the hand are guided by an awareness of the finger that is about to come into contact with the key. What sort of contact that will be is naturally important, as this contact is most directly responsible for the sound that will be heard. But setting this contact up is also a big part of obtaining the
sound I intend. By “setting up,” however, I do not mean making any explicit decisions that define the act of striking the key. Rather, by “setting up” I mean maintaining a clear intent for the sort of sound I am aiming to obtain, as well as a focused awareness of the hand and the finger as it is about to go into, or “descend,” into the key.

However brief the descent into a key may be, it can be effected in different ways, and the particular way of descending into this E-flat will be directly reflected in the way this E-flat will sound. Talking of this descent as a separate stage in the process of going into a key introduces a slight but important issue: there is no categorical boundary separating the gesture which brings the finger to the key from the continuation of that gesture as the finger enters into contact with the key and begins to depress the key into the key bed. However, the descent into the key is the focal point of the act of playing that E-flat.

Although part of a larger gesture, that descent also has dynamics of its own. Characteristically for me, it has an initial “phase” which is the slightest bit tentative. Because of the time scale on which a descent into a key unfolds, talking of a “phase” may be something of an exaggeration, but this initial tentativeness is nevertheless important—it lets me feel out the key and tells me a lot about what the rest of the way down is likely to feel like, and hence, what sort of sound this particular descent is likely to give me. In the larger course of the gesture so far, there are notable changes in how I move my hand: While I get between the previous, low-register position and the new one over the E-flat relatively quickly, there is a noticeable slow-down as I near the key (the E-flat). As I come into contact with the key, there is very little of the inertia of the larger gesture left. The hand “hovers” in position, and the finger does not dive into the key continuing on
previous inertia. Instead, the initial contact is tentative, the finger pressing on the key at first just enough to get to know what that key feels like.

The importance of this initial “phase” of contact with the key can be illustrated by contrast, by describing movement executed on a much rougher scale. In the case of the initial tentative “phase,” having my finger in contact with the key before it descends all the way into the key bed lets me feel that my finger is fully centered over the key. On the contrary, flinging the hand up from the previous lower-register position may mean that my finger misses the key entirely, or that it lands on the right key but also falls into a neighboring crack. A more controlled but still not very refined movement up may land the finger on the key but give me an unwanted accent or a barely audible sound. The tentativeness in the initial contact with the key lets me get my bearings on the keyboard; it also lets me gauge the rest of my movement as the finger continues to depress the key further into the key bed.

In playing this particular E-flat on the instrument and in the space described above, this initial tentative phase is quite pronounced. Under the particular conditions I have in mind, I am working with a keyboard that feels quite stiff, i.e., there is considerable resistance from the keys on the way down into the key bed. Towards the key bed, however, the resistance is not such that getting a larger sound becomes a struggle, i.e. the key bed does not feel too padded, and reaching it gives a relatively big sound.

Although somewhat subdued, the instrument is powerful, perhaps too powerful for the space it is in. The carpeting may have something to do with the subdued quality of the overall sound, and in effect, it may be helping to bring the sound of this powerful instrument somewhat in line with the proportions of the room. Still, on this instrument,
the initial thirty-second note flourishes would easily become too rich and resonant to fit my conception of the opening of the prelude. Thus, in these particular conditions, I am withdrawing some of the sound throughout. This is also the case for the E-flat; hence the pronounced tentative “phase” at the start of my descent into the key. That form of initial contact helps me keep my sound “under the lid,” as it were.

The rest of the way into the key is quicker. After I have made it some way into the key, I know I can no longer get too much sound on this descent--which is part of the intent for the sound of this E-flat. Because I want a sound that rings (projects), however, I do need a less tentative, more directed movement as I am nearing the key bed. With my way of handling the keyboard (with my technique, I could say), that quickening feels somewhat like a hooking motion, a rounding which starts from the flatter part of the fingertip moving toward the tip proper. This quick, hooking movement takes me very close to the bottom of the key bed, to a point where I am sure of where the key bed is, but without jamming into it. When I have felt the key bed, I know I can no longer influence the sound from the keyboard. The “phase” of the descent into the key is over.

At around that point a bigger motion takes over, a movement guided mostly by the wrist which breaks the contact with the key and brings the hand up a little ways above the keyboard. Perhaps because that movement is on a larger scale than the movement at the fingertips, the overall gesture of playing the E-flat looks (and to some degree feels) like an upward motion, beginning at the key and lightly springing up and away from it. This end part of the gesture is quite functional—it is a release of the tension, needed during the interaction with the key, but no longer necessary and potentially harmful past that moment. Such mini-moments of release also make it possible to keep the hand
supple and the fingers sensitive in their next contact with the keys. This upward gesture is both a release from a previous movement and a transition into a next one.

### Sound and Experience: On Morton Feldman’s Piano Music

“Microscopic Listening”

Intersecting sound and experience is obliquely but potently addressed in Catherine Hirata’s music-analytic essay on music by Morton Feldman. Without making experience *per se* a central topic, Hirata does deal with difficulties in addressing experience of sound. The analysis expands on established techniques of music analysis, positing personal experience and heightened awareness of sound as central to Feldman’s compositional aesthetic, and therefore, also important factors to consider in analyzing his music. The focus on sound as experienced raises both methodological and epistemic questions. Hirata points out some ways, in which traditional analytic approaches fall short of getting at something central about Feldman’s music, going on to create a vivid sense of that central element.

An important focal point in Hirata’s article, in her discussion of Feldman’s solo piano composition “Last Pieces,” is the sense of “how the F – how *just the F* – sounds,” which she also addresses as a sense of “what you hear *in* the F.” While maintaining the focus on “the F,” both questions Hirata poses about that F – of how the F sounds and

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14 Ibid., 9, 11, emphasis in original.
what one hears in the F – imply an experiencer, an active listener to whom the F sounds in particular ways, and who hears something particular in that F.

With the music of Morton Feldman, focusing the discussion on the particular quality or richness of a single sound is an important move. The music seems to foreground the phenomenon of sound as if on its own: “the relations enrich the individual sounds,” creating a sense “of that F having a sound all on its own,” Feldman’s F is “a sound which is … expressive.”¹⁵ The article beautifully sensitizes readers to the richness of a single sound, to the possibility of hearing in this sound a character, a quality, an expression that is intimately tied to the context the sound is embedded in, but which is not the same sort of expression as the expression associated with of a melodic line or a harmonic progression.

Particularly striking in Hirata’s discussion are, first, the idea of a sound acquiring its own expressive character, that seeps into but is yet not synonymous with the relations the sound’s context provides; and second, the illustration that Hirata evokes to get at the sort of expression the sound carries. The illustration is a somewhat myth-like story of Feldman’s piano teacher, Mme. Press, who “(in Feldman’s words)… would put her finger down, in a Russian way of just the finger. The liveliness of the finger. And produce a ‘b’ flat. And you wanted to faint.”¹⁶ These two points are of course closely linked, as it is precisely the ways in which a single sound can feel so rich and fulfilling as to make one “want to faint,” that are the central focus of Hirata’s analysis.

¹⁵ Ibid., 11, emphasis in original.

¹⁶ Ibid.
In a later (unpublished) essay entitled “Listening to Madame Press,” Hirata does extend the idea of Mme. Press’ B♭, to suggest that “…we might hear that B♭ even in, for example, tonal music.” To do this, she invites her reader to consider relations between sounds. Even just two sounds can be connected (one seeming to go to the next), or not connected (both seeming to belong to other configurations, for instance), as well as a third option that identifies a wide range of possibilities in between; weak and tentative connections, only hinted at, forming and dissolving as one’s awareness shifts, dwelling on different aspects of the sounds that Feldman offers in his characteristically sparse, slow-motion way. Perhaps Feldman’s music is particularly well suited to developing and illustrating that “third option”, but what that third option chiefly amounts to is what Hirata calls “microscopic listening,” a term she coins to refer to a sort of hyper-awareness in hearing sounds and the relations between them. As a way of listening, such hyper-awareness is available not only when attending to Feldman’s compositions, but also to engagements with other kinds of music.

Nonetheless, in the context of Feldman’s music, the idea of “microscopic listening” seems particularly rich and evocative. As Feldman does seem to offer sounds as if on their own terms, a discussion of what one hears in a particular sound seems particularly well placed. Here I am bringing together ideas from both essays, as the

17 I am indebted to the author for sharing this material. Catherine Costello Hirata, "Listening to Madame Press," (2005), 1.

18 These ideas are at the core of the following published work: Catherine Costello Hirata, "G Maybe-to G#," Perspectives of New Music 43, no. 2 (2005).

idea of microscopic listening and the question of what one might hear in a given sound point the attention in a similar direction. Concentrating on the F of Feldman’s “Last Pieces,” as Hirata does, brings that F into high profile, opening the possibility to hear that F as an event, rich with musical significance. Expanding on this line of thought, the idea of microscopic listening brings into focus the possibility to experience a sound in a multitude of different ways, highlighting the latent richness of a personal experience of that sound.

The experiences Hirata addresses in her Feldman analyses are an expression of both the particular characteristics of the music and the particular engagement of a listener, and the idea of microscopic listening foregrounds the potential richness of sonic experience, which emerges with the listener’s involvement with that sound. This kind of listening implicates the listener as an active agent in the experience of sound. Addressing a listener’s activity in regards to the sounds of Feldman’s music, Hirata’s notion of microscopic listening articulates a way to communicate about a particular sonic experience, a way of listening, which is particularly attentive and engaged, and opens ranges of possibility for what one might hear in a particular sound, like the F in Feldman’s “Last Pieces.”

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Below is a description of a qualitative study, conceived at the Computer Music Center at Columbia University. Taking its cue from Alfred Brendel’s remarks on the constant variability of performing situations and performing experience, the study aims to open to investigation the ways that pianists may adjust their actions in performance in order to obtain a desired sort of sound under particular acoustic circumstances. In particular, the study aims to address the question of how do pianists obtain musically appropriate sound in performance, where “musically appropriate sound” is defined as sound that the pianist assesses as working well for the particular composition being performed during a given performance situation.

Performers are continually faced with different performing situations. Typically variable factors include space acoustics, the presence and size of an audience, and the particularities of different instruments, when these are provided by the performance space. On an artistic level of performance, these variable conditions have to be taken into account by the performer/s, as they significantly impact the overall sound of the performance.

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23 Heartfelt gratitude to Prof. Brad Garton, Director of the Computer Music Center, for his assistance and support in the development of this project. Thanks also to Sampo Haapamaki for musical and technological insight, to Brian Jacobs for valuable technical support, and to Amir Khosrowpour and Geoffrey Duce for thoughtful and enthusiastic participation.

24 Brendel, *Alfred Brendel on Music*: 335-36. Cf. also the opening section of this chapter, titled “Obtaining the right sound.”
performance. Taking such variability into account may well mean incorporating minute but important real-time adjustments into the execution of a performance, even when the performance is of a fully notated score, as is the case with the overwhelming majority of music of the classical repertoire. Although the performance of classical music is not typically associated with acts of improvisation, achieving a desired sort of sound in the conditions of a particular performance situation may well require actions that could not have been fully worked out in rehearsal. When focusing on this dimension of a performance act, a certain degree of improvisatory adjustability may be a routinely present characteristic of a classical music performance.

The studio used for this study is equipped with an eight speaker surround sound system. Using a Max/MSP patch and Matrix reverb software, the sound generated by an acoustic Yamaha grand piano is subtly enhanced and played back into the room in real-time. The amount and type of reverb is controlled through the patch. The effect is a slightly altered overall sound, which the pianist hears as s/he performs in the studio. Particularly important for the purposes of this study is that any enhancement to the sound in the studio must be kept to a barely perceptible level. The type of reverb and the volume of the output sent through the speakers are maintained such that the overall change in the sound of the room remains extremely subtle throughout.²⁵

²⁵ Cf. Figure 8.
Figure 8. Studio setup in Pilot Study 2: Acoustic sound is picked up, routed through the computer, and played back in real-time; output levels of processed sound are kept low throughout.

For the purposes of this study, it is important that the sounds being analyzed be part of musical performances. It is the musical context of these sounds that allows for the criteria of musical appropriateness of a particular sound to be considered. A performer’s sense of what sound is suitable (“works”) for the performance of a given piece of music is a focal point for this study. As a performer’s sense of how well a given sound works musically is tied to the performer’s relationship with the piece of music s/he is performing, the choice of repertoire for this study is important.

Pianists are asked to prepare for performance a part of Morton Feldman’s *Last Pieces*; the considerations which led to the choice of Feldman’s *Last Pieces* were technical feasibility and likelihood that performers have explicit observations about listening in performance.
The pianists are asked to perform the same excerpt three times in the studio, taking as much or as little time as they wish between the three performances. The amount and type of reverb varies subtly between performances but is consistent throughout each performance. After the recording session, pianists are asked several open-ended questions about their experience in the studio.

At this stage, two pilot studies have been completed. One focuses on timbral variability by comparing timbral profiles of the first chord of Last Pieces played under identical studio conditions. The other focuses on the interview responses of one participating performer, New York City based pianist Amir Khosrowpour.

Pilot Study 1:

In an extended recording session, several (roughly 30) performances of an excerpt from Last Pieces were recorded. For this session, none of the possibilities for enhancing the sound were used, and recording conditions were kept as identical as possible. Corresponding short portions (a single chord) of the recorded excerpts were chosen for spectral analysis. In choosing excerpts for spectral analysis, recordings that sounded maximally similar on playback were preferred.

Results and Discussion of Pilot Study 1:

The comparison of the timbral profiles of the selected recorded sounds suggests that sonorities having identical timbral characteristics are extremely unlikely to occur in piano performance. Although the pitch content is identical across all recorded performances and
dynamics levels are very similar for the excerpts selected for comparison, the presence, strength, and mix of partials varies for corresponding sonorities in each recording. On careful listening, the variations in spectral characteristics can be appreciated as variations in the sound heard.
Figure 9. Graphic images comparing the sound of the first chord in two performances of Morton Feldman’s *Last Pieces*. Even for chords chosen for maximal similarity in voicing (relative dynamic level between the notes comprising the chord) and overall dynamic level, both the sine wave (time domain) representation (A and B) and the spectral profile representation (A1 and B1) show detectable differences.
Pilot Study 2:

The full experiment as described in the Experiment Design section was run with one participating performer, pianist Amir Khosrowpour. What follows are preliminary observations on Khosrowpour’s interview responses.

Discussion of Pilot Study 2:

In talking about performing the Feldman pieces, pianist Amir Khosrowpour continually referred to how well a particular sound “worked”. During the interview after the studio session, Khosrowpour recalled several instances of being more or less happy with points in each of the three performances we recorded. He particularly recalled that during one of the three performances, things kept going wrong in a particular way: …“I kept playing louder than I wanted to”; “the outer [pitches of a chord] was always a little startling, it didn’t work”; “the attacks were stronger […] than I expected”. During this particular performance, the enhanced sound played back through the speakers, although kept to a very low volume level, was simulating the acoustics of a large, reverberant space. Although nothing about the instrument had changed, obtaining a sound that “worked” (in this case a sound that was softer and not startling) became more difficult in comparison to the other performances.

Khosrowpour talked of the sounds that “didn’t work” in terms of his own actions at the instrument. From his practical perspective, the change in room acoustics was experienced in terms of these actions. As the performer, he did not control the acoustic conditions of the performing situation, but he did expect himself to be able to handle the
instrument in such a way as to obtain sounds that “work”. Implied in his remarks is the observation that with the change in acoustic conditions, the actions that would obtain a sound that works would have to change as well.

Implications and Future Work:

At this stage, this project is incomplete, and it is premature to generalize on its implications. Further interviews are likely to reveal more about the sort of adjustments pianists may make in their approach to the instrument as they work with the continual, subtle changes in their sonic environment.  

*Sound, Experience, and the Music of Morton Feldman*

In his discussion of musical sound, media studies scholar Aden Evens foregrounds nuance and continual change in the life of a sound. This focus directly engages Hirata’s

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26 A similar project may be designed where pianists are asked to perform standard repertoire. This variation would allow for an additional focus on common beliefs concerning the desirability of real-time adjustments during performance, especially the performance of standard classical music repertoire. As Khosrowpour – as well as another participant, pianist Geoffrey Duce, who joined the project at a later stage – noted, there is a strong expectation to be able to deliver the same previously worked-out rendition of a standard repertoire work across different performances. Such expectations are at odds with the focus of this study on the non-replicability of sonic conditions, and this tension has already yielded some suggestive observations from both of the musicians interviewed so far.

analysis, and more specifically, her notion of “microscopic listening.”  As Evens notes, the vibrations to which he directs attention – the essentially nonreplicable vibrations resulting from the interaction of the source and the space – are relatively weak. They are not the dominant components of the overall sound wave that might represent a given musical sound. However, such relatively weak vibrations do inevitably exist.

The question of how significant a role these vibrations play in the musical experience of a sound brings experience – and microscopic listening – back into the center of discussion. Microscopic listening is contingent on a listener who attends to sound in more or less detail, becoming more or less aware of the acoustic events unfolding through the duration of that sound. If a given acoustic sound in a given space and time will unfold in ways, which are at least to some degree characterized by continual, irregular change, does this kind of change figure into the experience of that sound? Can it be part of what one hears in the sound? An answer to these questions will inevitably be contingent on the particular engagement of a particular listener. Like the notion of the “sonic effect” developed by Augoyard and Torgue, which serves as a conceptual tool that aims to intersect “physical and human dimensions of sound,” incorporating “a set of mutual references between the sound […] and its interpretation,” such an answer will lie at the intersection of “physical and human dimensions of


31 Ibid., 11.
sound.” It will engage both the physicality of air vibrations and the personal experience of these vibrations as musical sound.

**Sound in Time**

**Instrument Recognition and the Dynamics of Timbre**

The recognition of the characteristic sound of a musical instrument is a phenomenon addressed by research in psychophysics, a necessarily interdisciplinary field. Although clearly resting on the physics of sound, instrument recognition also entails the responses of a perceiving subject. Thus, a psychophysical account of the characteristic sound of an instrument addresses both sound as a physical phenomenon, and sound as perceived.

In his overview of musical acoustics, Donald Hall addresses common, informal ways of describing sound, exploring corresponding terms of description in the realm of physics. Although none of the correspondences are simple and linear, some are more straightforward than others. Perceived loudness – though not musical dynamics – is relatively fully described in terms of intensity (energy level of vibration), and perceived pitch is relatively fully described in terms of frequency. However, a sound heard can also be recognized as “smooth/rough, hollow/full, trumpetlike/violinlike, and so on.”

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32 Ibid.

The physics term for describing such perceptions is generally “timbre,” which Hall defines as “a category to include everything other than loudness and pitch.”

Timbre is strongly linked to waveform, and is sometimes described in terms of the relative strength of partials over time. However, that is only a rough definition. Retaining the same relative distribution of energy, but altering the frequency of a sound, results in a significant change in timbre. Changes in intensity also significantly affect both timbre and timbre recognition; sensitivity and thresholds of perception differ in different frequency ranges, making given parts of the spectrum more or less salient at different levels of loudness. All of this occurs without compromising the perception of an instrument’s characteristic timbre. Thus, although a representation of the relative strength of partials over time offers a good account of the timbre of a given musical sound, it does not fully describe the physics behind instrument recognition.

Research work focusing on the design of electronic synthesizers, capable of imitating the sound and feel of an acoustic piano, specifically addresses the complex relationship between the intensity and the spectral characteristics of a sound played on an acoustic piano. In the words of design mathematician Philippe Guillaume:

… even a given instrument [an acoustic piano], depending on how it is played, particularly the intensity, will change the number of higher harmonics produced: in just about every instrument, the relative intensity of higher harmonics …

34 Ibid., 98.
35 Ibid., 393.
increases when a note is played more intensely…, which modifies the timbre, a
typical non-linear behavior of the instrument.\textsuperscript{36}

A single keystroke at the piano keyboard engenders a multitude of interacting
vibrations, and even minute differences in the motion of the hammer, whose impact
triggers these vibrations, may have an important impact on the particular behaviors of the
vibrating parts, and hence on the overall sound that obtains from the instrument. If a
particular keystroke is part of a musical performance, the vibrations triggered by this
particular key stroke interact with already present vibrations, and vibrations are also
influenced by the use of the pedals. As the piano is a large and complex acoustical body,
minute differences in the ways a sound is initiated may lead to appreciable differences in
the overall vibration patterns of the instrument, and hence, in the spectral characteristics
of the sound. Moreover, the relative strength of partials, as well as the very presence or
absence of particular partials, is directly affected by the way the vibrations are set into
motion. The spectral recipe of any given tone sounded on a piano depends on the sort of
impact that triggers the vibrations in the string(s). Thus, differences in the impact are
directly linked to differences in the timbre of a piano sound.

Again, while arguably perceptible, such differences do not typically compromise
the recognition of the instrument’s overall timbre.\textsuperscript{37} Within the timbral category of
recognizable piano sound, there characteristically is room for variation. A study cited by


\textsuperscript{37} Ibid., 89ff, as well as 160ff.
Fletcher and Rossing reports that decay patterns on different instruments do not replicate exactly. The life of vibrations produced by striking the same key varies to some degree from instrument to instrument. While the sound of different pianos may be easily recognized as sound produced on a piano, sound produced on different pianos may also feature some differences, which are reflected in the decay patterns of vibrations.

“The Continuity of the Piano’s Sound”

The perception of musical instrument timbres is inherently dynamic: it is tied to the unfolding changes of the sound over time. Specifically, the transients at the onset and the decay patterns as the sound dies out strongly influence recognition. According to Hall, if hearing “only the steady middle part of each tone [played on a given instrument], judgments become much more difficult” than if the tones are heard in their full length.


40 Heinrich Neuhaus, *The Art of Piano Playing* [Ob izkustve fortepiannoi igry], trans. K. A. Leibovitch (London: Berry & Jenkins Ltd, 2002). 62. The full passage containing this phrase is discussed in an upcoming section, titled “Heinrich Neuhaus on a pianist’s work on sound.” It is the following:

“…One of my favorite pieces of advice is the following: play a note or several notes simultaneously with a certain amount of force and hold them until the ear ceases to detect even the slightest vibration of the strings, in other words until the tone has completely died away. Only those who clearly hear the continuity of the piano’s tone […] with all the changes in volume, can, first of all, recognize all the beauty, the nobility of the piano, […] secondly, they will be able to master that essential variety of tone…”
The onset and decay – moments of dramatic change in the waveform or spectral representation of a sound – play an important role in recognizing instrumental timbre.

The acoustic piano is an example of an instrument whose sound is characterized by particularly complex patterns in the harmonic spectrum, continually evolving over time. The evolution of the patterns of partials (overtones) is significant. Physicist Bernard Richardson specifically notes:

> [It] is often stated that [the] spectrum of the sound determines its tone quality or timbre. This is an oversimplification, however. The shape of the waveform changes constantly throughout the duration of the sound, and it is better to say that the timbre is determined by the relative frequencies, strengths and evolution and decay rates of the partials. The ear is also very sensitive to the starting transient of the sound…

The diagram below offers a clear illustration of the continual variability of the spectrum, by tracing the life of different harmonics of the sound produced by striking one key, a low C. Each of the graphed harmonics follows an individual, characteristic pattern of intensity over time.

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Thus, the duration of a single note or chord played on the piano is defined by continual change in the spectrum of the sound. Thus, Heinrich Neuhaus’ insistence on the importance of hearing the “continuity of the piano’s sound”\textsuperscript{45} may be considered in terms of the physical description of timbral characteristics of the instrument. In a literal sense, Neuhaus’ advice may be understood as asking the pianist to focus her/his attention on the timbral characteristics of the sound, hearing them out in detail, and hence, developing a particularly well honed sensitivity to the minute changes, which define the characteristic timbre of the piano.


\textsuperscript{45} Neuhaus, \textit{The Art of Piano Playing}: 62.
Timbre is a significant topic in Aden Evens’ book Sound Ideas: Music, Machines, and Experience. On Evens’ view, timbre foregrounds nuances of musical sound, and in some sense happens in the interaction between a musical instrument and the acoustic space surrounding the instrument: “Timbre [...] fades into a background, at its subllest limit becoming indistinguishable from all the vibrations ongoing in the surrounding space.”

In his opening discussion, titled “Sound and Noise,” Evens compares timbre in live performance with what is heard on a recorded disc. Evens evokes the recording as a way to problematize the distinction between noise and musical sound, pointing out that during a recording session, a sound engineer has to draw a distinction between the sound of musical instruments and the noise in the room. To a large extent, where exactly to draw that line is decided on the basis of the recording engineer’s personal beliefs and preferences. Once the recording is complete, one level of distinction between musical sound and extraneous noise becomes clearly defined, but the recording is actually singular in offering such a clear-cut separation.

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46 Evens, Sound Ideas: Music, Machines, and Experience.

47 Ibid., 7.

In a live performance that distinction is much less categorical; listening to only the source of a sound is practically impossible. In Evens’ words,

An open E-string bowed on a violin excites at once the string, the body of the violin, the other strings, the body of the violinist, the air around the violin, the material of the room… …[E]very sound interacts with all the vibrations already present in the surrounding space; the sound, the total timbre of an instrument is never just that instrument. … The timbre of the sound includes not only the many […] components issuing from the violin but all the incidental vibration that already animates the space, waiting to be modulated to the point of audibility by a suitable sound.⁴⁹

Sound is perceived in space. It cannot be focalized to a point right on the instrument in an effort to eliminate all interference. The overall sound of the instrument can only be heard as it exists in the space the instrument is in; the sound of an instrument filling up a space in effect defines that space in auditory terms.⁵⁰ A space never remains indifferent to a sound produced within it, and is inevitably moved into vibrating sympathetically with that sound. As Evens notes, “Even a sine wave, once given life in a room, will excite its harmonics in sympathetic bodies.”⁵¹ Thus, the sound of an


⁵⁰ Evens refers to bats and submarines to illustrate this point: ibid., 54.

⁵¹ Ibid., 47.
instrument is inevitably also the sound of the space: “Every sound is shaped by both the means of its production and by the space wherein it propagates.”

The sound of an instrument emerges, as it were, from the acoustic properties of the space. A stable, unequivocal threshold never settles between the finer characteristics of the source sound and the interacting vibrations of the surrounding space. The sound of the instrument rises out of and recedes back into the sound of the space. Inside a concert hall, the sound of the piano consists of the multiple vibrations that the instrument engenders in that particular space, and the ways in which these vibrations reflect and interact with each other to construct both the acoustic space and the instrument’s sound. Timbre, a quality of sound predicated on fine detail and continual changes, is intimately related to space acoustics, and does not lend itself to fixed, categorical definition. To a significant extent, it resides in the infinitely fine and infinitely variable qualities of the vibrating air. Thus, the sound of an instrument becomes contingent.

52 Ibid., 54.
53 Ibid., 17.
Sound as Act: Sound, Embodiment, and Pianistic Ability

Listening at the Piano

In numerous accounts of artistic piano playing, sustained engagement with sound is often discussed as the key to developing performance ability. Late Romantic virtuoso Ferruccio Busoni, for instance, says the following:

There is a detail […] which is of such vast importance that one is tempted to say that the main part of musical progress depends upon it. This is the detail of learning to listen. Every sound that is produced during the practice period should be heard. That is, it should be heard with ears open to give that sound the intelligent analysis it deserves. …

…At my own recitals no one in the audience listens more attentively than I do. I strive to hear every note…

Several decades later, another acclaimed pianist, Walter Gieseking, echoes Busoni’s sentiments: “… critical self-hearing is … by far the most important factor in all of music study…” In the introduction to a method book by his principal teacher, Karl Leimer, Gieseking links a specialized ability to listen directly to technical execution:

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“…Only trained ears are capable of noticing the fine inexactitudes and unevennesses, the eliminating of which is necessary to a perfect technique.” Gieseking’s conception of technique includes a focus on expression. He talks of playing “not only finger-technically but also expression-technically.” But even in a broad conception of technique – one which incorporates dimensions of expression and artistry – technique still explicitly refers to the physicality of the act of piano playing. Gieseking’s statements, asserting the importance of trained habits of listening, effectively place listening in the center of pianistic ability. If “only trained ears” can lead to a “perfect technique,” then a specialized listening skill lies at the center of a pianist’s technical prowess.

The ways Gieseking talks of listening are telling. He uses the terms “self-hearing” and “self-control” almost interchangeably. There is also the significant difference between hearing in an everyday sense, and hearing the sound of one’s own actions in the course of playing the piano. Gieseking talks of the sort of listening he advocates as “self-hearing”: “Karl Leimer educates the pupil first to self-control; he shows the pupil how to hear himself. […] Through a continuous self-hearing […] the student will be enabled to play the piano with an irreproachable technique and with a feeling for the sound-beautiful.”

In talking of self-control, Gieseking frames listening at the piano as a way of sustaining focus on one’s own activity. “Continuous self-hearing” becomes a way of describing steady concentration, anchored on the sound one makes in the act of playing.

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56 Ibid.
57 Ibid., 6.
58 Ibid., 5.
In learning to “hear himself,” the student trains particular habits of attention, and learns to sustain his focus on the sound he makes. In continuously hearing the sound he makes, the student is continuously keenly aware of the activity in which he is involved; in sustaining his focus on the sound, the student exercises self-control by keeping his concentration steady throughout the unfolding act of playing the piano.

Heinrich Neuhaus’ Notion of the “Artistic Image”


59 famed Russian pedagogue and pianist Heinrich Neuhaus

60 consistently speaks of the importance of sustained and focused listening. He often discusses listening in the context of a pianist’s “work on sound.”

61 Neuhaus devotes considerable attention to this work on sound, discussing it partly through a reference to the “spiritual qualities”

62 of the student. The reference to spiritual qualities is most directly engaged through the notion of the “artistic image,” an important topic in Neuhaus’s book. By the term “artistic image,” Neuhaus designates a sort of personal conception of sound in the context of a particular composition. The reference to “spiritual


60 Heinrich Neuhaus (1888-1964) taught at the Moscow Conservatory from 1924 to the end of his life. Among his students were Svyatoslav Richter, Emil Gilels, Alexander Slobodyanik, Radu Lupu.


62 Ibid.

63 Ibid., 7-29.
qualities” points to the richness and refinement of the imagination, which in turn
determines the ease with which a pianist reaches such a personal conception of the ways
a composition would sound.

In the context of Neuhaus’s discussion, the notion of spiritual capacity is
inextricably tied to a tradition and its repertoire; this has very practical and even technical
dimensions. Spiritual capacity may be honed and developed, as the pianist works on
attaining and refining his own artistic image of the different works he performs. Work on
the artistic image is highly specific, in that it is developed and expressed through the
given musical compositions the pianist tackles, and firmly rooted in the idioms and
features particular to these compositions. Thus, work on the artistic image is in an
important sense work on becoming intimately familiar with the works of the classical
repertoire and absorbing the performing tradition associated with that repertoire. In the
course of such work, a pianist develops and hones an ability to conceive of the sound of
these works with greater and greater nuance and vividness.

One example of this sort of work is Neuhaus’ comment on a practical habit of
Leopold Godowsky, with whom Neuhaus studied and whom he admired very much.
Neuhaus recalls that Godowsky “once told us in class that he never practiced scales (and,
of course, that was so). Yet, he played them with a brilliance, evenness, speed, and
beauty of tone which I believe I have never heard excelled. He played the scales he
encountered in musical compositions… […] A small but significant detail.”64

Godowsky, it would seem, preferred to practice a particular scale, one that appears
within a composition and thus carries a musical significance. Here, the pianist addresses a

64 Ibid., 12.
physical task as it pertains to a musical idiom, a pianistic gesture, a work of music. In
practicing a particular scale, it is possible to work toward achieving a given sound
quality, a sound quality particular to this scale conceived as a musical passage. In
searching for a particular sound quality suited to a passage that forms a part of a musical
work, the pianist works on some part of the “artistic image” of the composition. In
practicing a scale as a musically significant part of a piece, the pianist works concurrently
on his technique and on his artistic conception of the composition. He works on what
Neuhaus calls (in a different context) “artistic technique.”

Working on a musical passage conceived as a part of an artistic work can happen on
any level of familiarity with the instrument. Rather than being reserved for the masters,
such work is a dimension of a particular approach to playing, whatever the level of
experience of the player. Neuhaus insists that even in working with children, the work
should be on a musical composition, albeit a simple one, rather than on exercises:

[W]hen a child plays an exercise or study, a piece which is purely instructive and
devoid of artistic content, he may, at will, play faster or slower, louder or more
softly, with or without nuances; in other words, there is in his performance an
inevitable element of uncertainty, an arbitrary quality; it will be playing without
any clear aim, … it will be ‘playing as it comes’ (and very often it doesn’t
‘come’)…

65 Ibid., 116.

66 Ibid., 11.
On my reading of Neuhaus’ pedagogical texts, this emphasis on developing the artistic aspect of pianistic experience, from the very early stages of one’s contact with the instrument, is central. Without the artistic context a piece provides, the aim in practicing remains unfocused. Often, the only aim the student works towards in practicing an exercise is to strike this as opposed to that key. Such a skill on its own, however, is unlikely to lead to an artistic performance, as everything else about the act of playing remains inconsistently or not at all addressed. Working on a piece of music, on the other side, allows for working toward more particular qualities in the sound, it allows for working on the artistic image as well. In working on a particular piece of music, the student works not only on playing the notes he intends to play, but also on playing them in ways he intends. He works not only on finding the right pitches, but also on having them sound a particular way. Of key importance in such work is again sustained, careful listening.

In working on even a simple piece as music, which has some artistic significance, a student begins to develop as a pianist. The development of even rudimentary physical skill is coupled with the quest for artistic development. Physical skill, spiritual experience, imagination, and familiarity with the repertoire develop concurrently from the beginning of a student’s contact with the instrument. The idea of the artistic image foregrounds this interrelatedness of many dimensions of the experience of piano playing.

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67 This approach may be linked to the “Russian School” of piano playing, discussed in Chapter I. It may be contrasted with an approach which posits a relatively more distinct divide between matters of technique and matters of interpretation. Neuhaus does not fully disregard this distinction, but insists on considering and experiencing physical execution and artistic conception in tandem, from the very early stages of study.
The artistic image refers to a vivid and active conception of music which demands a pianist’s holistic engagement.

Heinrich Neuhaus on a Pianist’s “Work on Sound”

Considered on a practical level, the ability to build and sustain a vivid “artistic image” rests on particular sorts of listening habits. In an important sense, the “artistic image” is a way of designating the role of the imagination in a pianist’s work on sound. The imagination develops in tandem with physical habits, but importantly, the development of these different dimensions of pianistic ability is contingent on a sustained attentiveness to sound. It is sustained, attentive listening that allows the pianist to discern the nuances, which make a particular sound more or less musically “right,” or in other words, more or less consistent with the pianist’s artistic image of the piece.

According to a popular anecdote, Anton Rubinstein is said to have often exclaimed, “You think the piano is one instrument? It is a hundred instruments!” Neuhaus recounts the anecdote at the outset of a discussion of working on sound at the piano. Working on sound is, in some sense, working on having the piano become “a hundred instruments” in one’s experience of its sound. Having the piano become “a hundred instruments” requires specific sorts of work on the part of the pianist. Neuhaus

estimates that “[in] my work with my pupils, I can say without exaggeration that three-quarters of all work is work on tone (sound).”

For Neuhaus,

[W]ork on tone is the most difficult work of all, since it is connected with the ear and – let’s face it – the spiritual qualities of the pupil. The less refined his ear, the duller the tone. By training his ear […] we directly influence his tone. By working at the instrument, persevering relentlessly in an attempt to improve the quality of tone we influence the ear and develop it.

For Neuhaus, work on sound is work on particular pianistic technique:

“…mastery of tone is the first and most important task of all the problems of piano technique that the pianist must tackle.”

Under Neuhaus’s description, the process of

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69 Ibid. A note on the translation of Neuhaus’ work: In the original Russian-language text, Neuhaus often uses the work zvuk, a ubiquitous word in Russian, which translates quite directly into the English “sound.” In the available English translation of Neuhaus’s book, the translator consistently prefers the word “tone” to render the Russian “zvuk.” In the absence of a translator’s note to the English edition, I would speculate that the choice to use the word “tone,” rather than the more obvious rendition “sound,” may be motivated by a desire to limit the reference to specifically musical contexts. The English “tone” is clearly not an exclusively musical term, but in some of its senses it does refer to music somewhat more concretely than the more widely used “sound.” Being “tone-deaf” for instance, is a handicap (or quality) that exists mostly in reference to music, and often to classical music. While I do not disagree with the choice to render zvuk as tone, I also do not feel that that choice captures something particular about Neuhaus’s discussion. Thus, I will largely continue to use what I feel is the most neutral translation of “zvuk” as “sound.”


acquiring the technique that enables mastery of sound is, first of all, a process of refining the ear. Although it is clearly a physical act, mastery of sound is consistently discussed as first and foremost a sort of listening skill.

In the course of a discussion on “technique,” Neuhaus offers a list of several technical problems with short discussions particular to each. The list begins with “the playing of one note.” Neuhaus makes the distinction between a note which is music and a note which is not. The distinction hinges on whether or not the note has a “past” and a “future,” on whether it is embedded in a musical context. Neuhaus illustrates with: “The famous single G-flat of the night watchman in the second act of The Meistersinger is music, and even the music of genius, but only because of what comes before and after it.” This distinction, which defines the concept of the “artistic image,” highlights the change in experience when striking one isolated note on the piano, and playing a note as part of a musical passage.

Neuhaus treats the playing of one note, experienced as music, as a fascinating “problem” for the pianist. In his own words, “On the piano it is possible to play a single note in so many different ways that this in itself is already an interesting technical

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71 Ibid.

72 At several points in the book, Neuhaus speaks explicitly about the virtues and drawbacks of being systematic in the context of piano pedagogy. This particular enumeration of different technical issues is similarly introduced by a paragraph that mixes some mild sarcasm into the task of systematizing piano technique into the particular list of issues that structures the ensuing discussion.


74 Ibid.
These endless possibilities, however, emerge through engaging the pianist’s imagination, and recruiting a particularly attentive and emotionally invested sort of listening:

If the player has imagination, then in that one note he can […] express a variety of shades of feeling: tenderness, and daring, and anger, and Scryabin’s *estatico* and loneliness, emptiness and much more, of course, by imagining that the sound has a “past” and has a “future.” If you are a musician, and a pianist, and that means that you love the sound of the piano, then this messing about with a single sound, a beautiful piano sound, this listening to the wonderful trembling of the “silver” string, is already a great delight, you are already on the threshold of Art…

For Neuhaus, developing the technique of playing one note is a process that engages the pianist’s imagination, her/his emotional experience, and her/his understanding of style and aesthetics. “Messing about” implies a process of discovery of the possibilities of piano sound, technique, and artistic expression. What is being developed in that process is not only technical habits, but also larger habits of experience, both always anchored on careful listening.

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75 Ibid.

76 Ibid., 116.
Neuhaus describes a tight interdependence between intending and realizing sound in a discussion of the rendering of polyphonic textures, a topic he treats as part of his larger discussion on sound. Talking about Debussy’s *Sonorités opposes,* he notes that …it is essential first to predetermine with the ear the finest shade of difference and quality of tone and then execute it with the fingers; but this requires a well-developed ear and touch.” In the same context, Neuhaus notes that a pianist should “seek out such [polyphonic] pieces and passages and then study them in order to perfect tonal technique. … [I]f the player understands this musically, i.e. if he *hears* the multiplane texture, he will inevitably find the means of rendering it; if, however, he is […] unable to hear the music mentally, the teacher must help him.

This “hearing … mentally” of the different strands of a polyphonic texture is part of the skills necessary in rendering a polyphonic musical texture in performance. The “study” which leads to perfecting “tonal technique,” however, is a matter of physical as well as mental work. It is in “messing about” with piano sounds, heard with attentiveness, that a pianist gradually hones both physical habits and mental hearing. Developing habits of attentive listening is at the heart of Neuhaus’ discussion of both the technique of obtaining a sound at the piano and the artistic conception of music central to pianistic

77 Claude Debussy, Etude No. 10, “Pour les sonorités opposées” from 12 Etudes, Book II


79 Ibid., emphasis in original.
ability. The focus on sustained attentiveness to sound is reflected in the following extended citation, which can be seen as the core of Neuhaus’ pedagogical legacy:

One of my favorite pieces of advice is the following: play a note or several notes simultaneously with a certain amount of force and hold them until the ear ceases to detect even the slightest vibration of the strings, in other words until the tone has completely died away. Only those who clearly hear the continuity of the piano’s tone (the vibrations of the strings) with all the changes in volume, can, first of all, recognize all the beauty, the nobility of the piano, […] secondly, they will be able to master that essential variety of tone…

The Notion of Zvukoizvlechenie

Under Neuhaus’ description, work on the artistic image is a process, through which a pianist gradually develops the capacity to conceive of piano sound musically. But such work is not strictly a matter of imagining. Developing the ability to conceive of piano sound artistically entails work at the instrument. It is contingent on the holistic process of coming to know the musical possibilities achievable in piano playing. It is a holistic familiarity with the piano and the possibilities it offers to the pianist, that enables and supports the ability to conceive of piano sound artistically. This ability is developed in interaction with the instrument, through repeated experience. As it develops, the ability to vividly imagine sound gradually comes to shape and direct action at the instrument. With

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80 Ibid., 62-63.
more experience, this ability becomes better and better honed, and enables increasingly finely-tuned action.

The finely-tuned actions of a pianist, by means of which he obtains sounds coherent with his artistic image of a given piece, can be described by a single word, used by Neuhaus at different points of his discussion: *zvukoizvlechenie*.\(^81\) *Zvukoizvlechenie* is a compound word, meaning to “draw sound out” (in Russian: *zvuk* – sound, *izvlekat’* – to extract, draw out). Although it is a noun, the word refers to an act, and implies continuity, much like the gerund form of verbs may function in English. The word refers simultaneously to sound as well as to the ongoing act of obtaining sound.

The word *zvukoizvlechenie* can have distinctive, spiritual overtones, as it shares kinship with words characteristic of the vocabulary of Old Church Slavonic, a language initially constructed over a relatively short span of time, with the express purpose of rendering Church texts and services into a form accessible to speakers of Slavic vernaculars. Although the emergence of a new alphabet is a commonly acknowledged part of the process of creating this language, an arguably more significant aspect of this process is the adaptation of common vernacular roots in ways that allow expressing the sometimes highly abstract content of Christian religious texts. A compound word with a suffix, and often the same suffix as in *zvukoizvlechenie*, is characteristic of the vocabulary that emerges in developing this explicitly pious language. As this language

\(^81\) Neuhaus is not unique in his use of this word. The word – in its specifically pianistic usage – may be commonly encountered in the work of other studios and institutions, as well as in different variants in other Slavic languages.
(still in use today) remains firmly associated with Church practices, its vocabulary retains, at least to a degree, some associations with spirituality and spiritual practice.\textsuperscript{82}

In some sense, \textit{zvukoizvlechenie} is an act of continual exploration.\textsuperscript{83} A conception is not a perfectly stable entity, and the ability to vividly conceive of sound is developed through hearing the sound realized in interaction with the instrument and the acoustic space. It is in realizing the sound that a pianist gains awareness of the possibilities of sound available through the instrument. At the piano, the realization of sound allows a pianist to find out what a given action sounds like. With ample experience, a pianist becomes able to both conceive of sound vividly, as well as to gauge the possibilities of a given instrument and acoustic situation. Thus, she becomes well able to fine-tune her actions in realizing sound in performance, adjusting them to match the particular conditions of sound production, as well as her continually active conception of sound.

In terms of pianistic experience, the notion of \textit{zvukoizvlechenie} in effect designates a tight, dynamic interaction which involves the pianist’s conception of sound, the realization of sound through the instrument, and the hearing of the sound produced in a given moment of performance. Such dynamically interactive processes can be viewed from the perspective of theoretical work, employing the fundamental principle of a cybernetic feed-back loop.

\textsuperscript{82} Cf. Boris Gasparov, \textit{Old Church Slavonic} (Munich LINCOM Europa, 2001).

\textsuperscript{83} Neuhaus’s description of “messing about with a single sound” suggests this element of active, personal discovery. Neuhaus, \textit{The Art of Piano Playing}: 116 esp.
Figure 11: A cyclical diagram of the processes involved in *zvukoizvlechenie*. The diagram represents the continual feed-back between the conception, realization, and hearing of sound in the act of piano playing.

*The Cybernetic Principle and Humanistic (Artistic) Research*

My view of *zvukoizvlechenie* is strongly conditioned by personal experience, as well as by theoretical work in embodied cognition, especially the work of Ulric Neisser and Francisco Varela, both of whom develop theories, which view cognitive ability as an ongoing, dynamic process of interaction. On the large-scale theory of “enaction,” developed by cognitive scientist Francisco Varela and collaborators, an organism is continually enacting its existence, as it is continually and actively negotiating its wellbeing in accordance with the features it encounters in its surroundings. In an

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important sense, an organism is continually exploring and learning, and in the course of its active existence, also shaping features of its environment. The organism and its environment exist in a dynamic interdependence, continually shaping each other. The organism is continually adjusting itself to its environment, simultaneously changing the environment in this process of active existence. This core idea is also explored and developed in the work of philosophers Alva Noë and Anthony Chemero, among others.  

Ulric Neisser’s “Perceptual Cycles”

In his book *Cognition and Reality*, cognitive psychologist Ulric Neisser articulates a theory of perception that foregrounds the dynamic interdependence of action and perception in an organism’s knowledge of its surroundings. In regards to specific modes of perception, Neisser maintains that “… listening, feeling, and looking are skillful activities that occur over time. All of them depend upon pre-existing structures, … which direct perceptual activity and are modified as it occurs.”

Cognition, under this view, is inherently active. In perceiving its surroundings, an organism continually employs its existing cognitive capabilities, which continually adapt as they are employed. The organism is constantly acquiring cognitive knowledge, as that


86 Neisser, *Cognition and Reality: Principles and Implications of Cognitive Psychology*.

87 Ibid., 14.
knowledge is both deployed and shaped in “the activity of knowing.” Different perceptual modalities, through which a person interacts with the world, are skills that this person has developed and continues to develop throughout his life. Perceiving is an act which is shaped by previous perceptual experience and remains continually adaptive. A person’s cognitive capacities, which are regarded as a totality of “mental processes,” incorporate these perceptual skills, and are similarly continually adaptive.

Within the framework of this theory, action and perception are linked into a tight feedback loop of continual, mutual engendering, which Neisser calls a “perceptual cycle.”

The cyclical structure of Neisser’s model foregrounds interactive feedback, which defines his view of perception. The cycles, however, are never identical; they support and engender dynamic processes in which the capacity for adaptation is continually manifest. The cyclical structure describes recurring patterns, but these patterns are continually changing: they develop as they unfold.

An important feature of Neisser’s theory is that the cyclical processes he models as perceptual cycles happen at multiple levels. In the ongoing interaction with the world, a person does not experience the distinct events of preparing to explore according to particular plans, carrying out an exploration, and assimilating the results of this exploration into further strategies for exploration; as Neisser puts is, these processes are “not likely” to follow “any single direction of flow or unified temporal sequence.”

88 Ibid., 1.
89 Ibid., 19-22 esp.
A “Dance of Feed-Back:” Intonation in Violin Playing

In his innovative discussion of creativity, violinist and improviser Stephen Nachmanovitch offers a short illustration of the dynamic dimensions of ability through some observations on finding the desired pitch in playing the violin. The basic structure

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90 Ibid., 54.


of the processes of active perception as theorized by Neisser can be traced through Nachmanovitch’ account of processes at play during violin performance.

For a beginner, finding the right pitch on a violin is a notoriously difficult task, as there are no pre-fixed indications of what the pitch of a sound will be when that sound is played. As the neck is not fretted, the only way to be sure of the pitch of a sound is to hear that sound. This, however, may mean playing the unintended (wrong) pitch several times before one finds the intended one through trial-and-error. Under this description, playing a note on the violin becomes rather like “aiming and shooting at an unmarked target.”

Nachmanovitch goes on to present a very different account of what happens in violin playing when some degree of mastery is achieved. He describes mastery as the ability to fine-tune a trial-and-error process to such an extent that it is never experienced as a sequence of actions and sounds. It rather becomes a “dance of feed-back,” between the physical position of the finger on the neck of the instrument, and “what the ear wants to hear:” “…the violinist (…) continuously adjusts the sound’s pitch by ear, at lightning speed.” The feed-back must be on a very fine scale, as the sound of this feed-back is never distinctly audible, and the motions involved are never kinesthetically experienced as distinct actions. The finger is guided by the ear. But for such feed-back to fluidly happen at lightning speed, the hand must be fully supple and responsive on the finger-board, and the ear must be acutely aware to continually detect the sound at minute levels, as well as anticipate the desired sound. The “ear” must know what it “wants to hear” in

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93 Ibid., 62.

94 Ibid.
order to guide the finger as it “glides up and down by minute intervals.” On this description, the listening and the hand motion are never experienced as independent, sequential activities: they form feed-back loops, in which each is continually definitive of the other.\textsuperscript{95}

However, such feed-back relies on utmost suppleness and sensitivity: “If we use just enough force to press the string, it’s easy to nudge the finger up and down smoothly in tenths of a second. But if more than just enough force is used (…), the finger will be temporarily glued to where it landed, and presto – you have an audible mistake.”\textsuperscript{96}

What is key in this account of tuning the sound of the violin is that it is not intended to describe an unavoidable but undesirable situation. The adjustments Nachmanovitch describes are not compromises acceptable when accuracy has not been definitively achieved in advance. He is not describing a situation in which more practice leads to dependably fixing the desired results and thus to reliability in performance. On the contrary, the feedback which guides the adjustments of the finger is a constitutive mark of virtuosity. It is the ability to sustain the physical, mental, and emotional conditions which engender and enhance such fluid feedback that is a definitive characteristic of masterful playing. This feedback makes it possible for the player to hear the sound as it is being made, and adjust the movement of his hand to what he wants to hear. Listening and playing continually overlap in sustaining the ability to tune the sound of the instrument.

\textsuperscript{95} Ibid., 62-63.

\textsuperscript{96} Ibid., 63.
Nachmanovitch’s account of finding “what the ear wants to hear” endows “the ear” with its own agency, referring – through a sort of synecdoche – to a precise sense of pitch which the violinist continually and actively maintains. This precise sense of the pitch may also be described as an active auditory imagination that effectively directs the motions the violinist performs to produce a sound on the instrument. This sense of the pitch is dynamic: it is continually active during the act of playing. Under Nachmanovitch’s account, every next note must be attended to in this way to ensure good intonation in playing a phrase, a passage, a piece. Intending the right pitch is key to finding that pitch. Making a sound on the violin is a subtle “dance of feed-back” involving a keen and active auditory sense continually negotiated with the movements of the hand.

For Nachmanovitch, who – perhaps significantly – is an improviser, the violinist does not learn to reproduce a particular set of pitches which constitute the correctly executed piece. Rather, the violinist finds the pitches he intends to play every time he performs. To do that, the violinist actively sustains the “dance of feed-back” throughout the course of a performance.

But mastery as described above also rests on accumulated experience. As described by Nachmanovitch, the feed-back happens on a very fine scale, which suggests that the player starts on the “dance” from a good position, a good estimate of where the finger belongs. The active process of finding a sound anew every time one performs depends on somewhat more stable patterns of experience. It is the enacting of already existing habits of violin playing. Acquiring mastery depends on repeated experience, which shapes the professional skill of the player. Mastery rests on accumulated
experiential knowledge, but is then continually enacted in performance. It is an ability to reliably act in particular ways, as well as the process of acting on that ability. Nachmanovitch’s account focuses on the dynamic actions in performance of an already masterful player.

Zvukoizvlechenie, Intonation, and Research in Cognition

Nachmanovitch’s account of violin playing and Ulric Neisser’s “perceptual cycles” may be considered in parallel. Neisser’s “schemata” (which is the word Neisser uses to designate already existing structures, enabling a given perceptual action) may be mapped onto acquired professional skill, which allows the violinist to estimate well the position of the finger on the neck of the violin. This ability to estimate is continually honed with further experience. The microtonal gliding of the finger over the string in search of the right inflection of the pitch can be described in terms of the following unit along Neisser’s cyclical model, which he calls “exploration.” The exploration is directed at the next unit over, “object / available information,” which in terms of Nachmanovitch’s account would map onto the violin and its sound.

Neisser’s description of the multi-level circularity of setting out to explore in particular ways, sampling available information of surrounding features, and instantaneously incorporating that information into further exploration, closely describes the situation in Nachmanovitch’s account of descending a finger onto an approximate position.

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97 Cf. diagram of Neisser’s “perceptual cycles,” reproduced earlier in this chapter.
place on the violin neck, instantaneously discerning even very faint cues as to the sound that is starting to result, and assimilating these cues into further action, which directly affects the sound. Where Nachmanovitch describes the process of finding a given pitch in violin playing as a sensitive, dynamic feed-back of finger motion and listening, a process of acting as well as perceiving on a fine scale, Neisser’s model posits action as necessary to perception, which in turn, informs and motivates further action, and so on, sustaining a process which continually shapes the capacities and abilities of an individual.

The development of the abilities in use in *zvukoizvlechenie* is a continually ongoing process. Like the schemata in Neisser’s model, these abilities are continually honed. They both enable the act of *zvukoizvlechenie* and are shaped in the course of that act. In order to effectively realize a given sort of sound, a pianist must maintain her active attentiveness to sound, her active conception of sound, and her active physical suppleness at the point of contact with the instrument. The act of obtaining a sound at the piano (*zvukoizvlechenie*) may be understood as the tight, dynamic interrelation of these three aspects of the holistic act. On this view, the “realization” of a sound is not a distinct step in a chain of events, but is rather a malleable process, which is contingent on the concurrent active listening and conceiving of sound. In other words, already existing ability enables the pianist to closely gauge her actions in terms of the sound she aims to hear, but conceiving and listening to sound must always be happening for the realization to work well in any given moment.

Human capacity for developing specialized, or out-of-the-common, perceptual abilities has been researched and documented in different fields. One startling illustration
is the work of Paul Bach-y-Rita on “sensory substitution.” The specialization, which
develops in the interaction with specific mechanical instruments, constitutes a perceptual
ability that incorporates this instrument, and allows the specialist to use the instrument in
ways that are not fully accessible to the non-specialist.98

In regards to auditory perception, an interesting illustration of specialized
listening skills is developed in Jonathan Sterne’s essay on physicians’ practice of
“mediate auscultation,” or listening to the body through the stethoscope. An important
part of Sterne’s argument is the claim that a practiced physician begins to discern in the
sounds of the stethoscope the conditions within the patient’s body, the body cavity being
likened to a resonating chamber or a musical instrument. This ability to discern is
theorized by Sterne as a sort of auditory expertise: “…Part of physicians’ elevated status
at the end of the century was based in the valuation of the skills specific to their
profession. They were, oddly enough, virtuoso listeners…”99

Recent work in cognitive neurology suggests that enhanced integration between
auditory and motor functions may, in effect, be a distinctive feature of the neurological
makeup of people who develop some degree of ability in playing musical instruments. In
a popular PBS broadcast titled The Music Instinct: Science and Song,100 Dr. Robert

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98 Paul Bach-y-Rita, Brain Mechanisms in Sensory Substitution (New York: Academic
Charles Lenay et al., "Sensory Substitution: Limits and Perspectives," in Touching for
Knowing, ed. Yvette Hatwell, Arlette Streri, and Edouard Gentaz, Advances in

99 Jonathan Sterne, "Mediate Auscultation, the Stethoscope, and the "Autopsy of the
Living:" Medicine's Acoustic Culture," in The Auditory Culture Reader, ed. Michael Bull

Zatorre working at the Montreal Neurological Institute of McGill University addresses the question of whether learning to play a musical instrument is beneficial to a child’s learning experience. He invokes neurological research which suggests that proficiency in playing a musical instrument correlates with strongly developed links between the left and right hemispheres of the brain, explaining that such links are likely to correlate to enhanced auditory-motor coordination necessary to music performance skills. Zatorre has initiated and collaborated on numerous studies and experiments aiming to trace neurological processes in the brain which correlate to musical activity. Implied in some of this research work is the view that doing music does affect the cognitive make-up of the doer, and more specifically, that the tight interaction between auditory and motor “systems” emerges as an important neurological correlate to musical activity.

A 2007 publication titled “When the brain plays music: Auditory-motor interactions in music perception and production” aims to “…review the cognitive neuroscience literature of both motor and auditory domains, highlighting the value of studying interactions between these systems in a musical context.”\(^{101}\) Although indirectly, such research strongly supports the idea of a specialized audio-haptic ability which emerges through the act of practicing, to become a characteristic mark of proficiency in playing a musical instrument.

In the act of zvukoizvlechenie, a pianist interacts with both sound and instrument. The process of obtaining a sound at the piano is always an exploration of both. Thus, the

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perceptual ability being developed is both auditory and haptic. In a very literal sense, 

*zvukoizvlechenie* is an act contingent on this specialized audio-haptic perceptual ability.
CONCLUDING REMARKS: SOUND, PIANOS, AND EXPERIENCE

Considering Sound in Classical Music Piano Performance

Numerous common score markings indicate experiential or emotional qualities that the music should presumably express in performance. Although there may be different attitudes toward such markings, they do appear, sometimes abundantly, in commonly used editions of works of the standard repertoire. Some such markings, especially of the Romantic and later periods, are widely believed to descend directly from the composer of the work.

Leafing through a very concise but popular Pocket Music Dictionary readily yields a sample list of common expressive score markings:

\begin{itemize}
  \item \textit{cantabile} (It.) – in a singing style
  \item \textit{con anima} (It.) – with life, spirit
  \item \textit{con fuoco} (It.) – with fire
  \item \textit{dolce} (It.) – sweet
  \item \textit{doloroso} (It.) – sorrowful
  \item \textit{ému} (Fr.) – with feeling
  \item \textit{furioso} (It.) – furiously, wildly
  \item \textit{grazioso} (It.) – graceful
  \item \textit{klingend} (Ger.) – ringing
  \item \textit{lamentoso} (It.) – mournful
  \item \textit{lebhaft} (Ger.) – lively
  \item \textit{leicht} (Ger.) – light
  \item \textit{lieblich} (Ger.) – sweet, melodious
  \item \textit{mesto} (It.) – sad
\end{itemize}

misterioso (It.) – mysteriously
morendo (It.) – dying
scherzando (It.) – playful, light-hearted
smorzando (It.) – fading away
sotto voce (It.) – “under the voice”
tratto (It.) – calm
verhallend (Ger.) – fading away

There are many more extended and nuanced expressive markings to be found in scores from Beethoven to Debussy to Prokofiev. What are such markings expected to communicate to a performer? Do they affect a performer’s actions at the instrument and the sound the performer achieves in performance? What happens in the performance of a passage that makes possible the experience of a given expressive quality?

The experience of expressive qualities in classical piano performance may be common, and in effect, it may be what defines favorite concert events or recordings. But even if it is the expressive qualities of music that keeps both performers and classical music lovers engaged, how much is actually understood about how such qualities come into being in piano performance? If a certain musical passage is marked dolce, it may seem natural to say that the performer should play it sweetly, and a listener would then experience the sweetness of the music. But what does a pianist do in order to play a passage sweetly? And how does such sweetness make it across to a listener? Does it always make it across? And what is it that is being carried across?

In response to the topic of sound quality in piano playing, established pianist and scholar Jeffrey Swann jokingly suggests that having the secret of singing sound at the
piano would make the keeper of it wonderfully rich.\textsuperscript{2} Although musicians often talk about sound quality in piano playing, the topic has remained notoriously elusive.\textsuperscript{3} Many musicians hesitate on how to answer the question whether there is anything a pianist does that directly affects sound quality in performance, or what exactly that something could be.\textsuperscript{4}

Scientists working in physics, acoustics, and psycho-physics have also addressed this question.\textsuperscript{5} After considering some experimental studies explicitly addressing expressivity in piano performance, physicists Neville Fletcher and Thomas Rossing conclude that “[t]he touch of a pianist appears to be of importance in piano performance.”\textsuperscript{6} It is precisely “the touch of the pianist” that is the core topic of discussion in my research.

This “touch,” however, is considered as part of a larger interaction anchored on sound. This dissertation focuses on the actions of a pianist as they unfold dynamically, articulating an understanding of these actions as part of an interactive feed-back loop in which the making and the perceiving of sound effectively happen simultaneously. Fundamental to this view is an understanding of sound as both physical phenomenon and personal experience.

\textsuperscript{2} Informal conversation.

\textsuperscript{3} See especially interview with Dr. Philip Lasser of the Juilliard School, in Chapter III.

\textsuperscript{4} Detailed discussion in Chapter III.

\textsuperscript{5} Detailed discussion in Chapter II.

\textsuperscript{6} Fletcher and Rossing, \textit{The Physics of Musical Instruments}: 314.
Future Directions

As viewed in this work, a musical performance is an ongoing interaction which can be considered from many different perspectives, foregrounding the place of the instrument, the acoustic space, the musical background of the performer, the experience of a listener, and so on. Thus, the discussion can engage questions not only in music performance studies, musicology, or music pedagogy, but also in cognitive science, psycho-physics, sound studies, ethnography, cultural studies, and potentially other areas as well. Thus far, several areas in particular have come to the fore, and readily point to future exploration.

Cognitive Theory: Exploring the “Dynamic Stance”

This dissertation offers a perspective on sound in piano performance, which is contingent on connecting the realms of the physical (outward) world and personal (inward) experience.7 Such connection happens through viewing these realms as continually and dynamically interactive.

A dynamic view of relationships between outer world and inner experience is fundamental to theories which have been developing in the field of cognitive studies.8

7 A discussion of sound in piano performance necessarily engages both the physical sound of a performance and personal experience of that sound. Cf. for instance, discussion in Chapter II of what Gillespie theorizes as “the paradox of the piano.”

When such relationships are seen as fundamentally interactive, boundaries between the interacting realms begin to shift, and states on either side of the interaction become continually negotiable. Cognitive philosopher Anthony Chemero treats what he calls the “dynamical stance” as essential to developing a fundamentally embodied view of cognition, or what he calls “radical embodied cognitive science.” As Chemero explains, the phrase “radical embodied cognition” was introduced by philosopher Andy Clark in the process of arguing against such a position. Chemero, however, adopts the phrase to describe a position he, as well as other researchers, sees as promising.

In terms of piano playing, the “dynamic stance” highlights the continual change which a pianist negotiates as s/he creates a sound at the piano. Considered on a fine scale, the sound of a piano performance is continually evolving, contingent on the acoustic environment, the characteristics of an instrument, or any other circumstantial factors with which a pianist works in the act of performance. Hence, pianistic experience may offer suggestive material in the study of continual adjustability, which may be a hallmark of cognitive function as theorized by scholars like Neisser, Bach-y-Rita, Varela, and most recently, Chemero, Thompson, or Noë.

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10 Andy Clark, Being There (Cambridge, MA: MIT Press, 1997).


The focus on sound quality provides a particular perspective on piano performance which foregrounds the dynamic variability of the act. In this sense, pianistic experience of sound may offer fertile ground for the study of malleability in cognitive function. In particular, it may present a valuable opportunity to study coordination between auditory and haptic perceptual activity. As with Ulric Neisser’s view of common perceptual ability, the specialized ability to shape sound quality in piano playing is continually shaped. Such ability develops through the act of playing and continues to develop – even if ever so subtly – every time the pianist interacts with the instrument. In the process of playing, the pianist acts on such ability, continually shaping her movements to the sound of the piano, and thus shaping that sound. As she acts on that ability, she also continually develops and hones it.

In much more practical language, it is possible to speak of the continual malleability of a pianist’s abilities in terms of the importance of practicing. As is clear to pianists and non-pianists alike, a pianist needs to practice in order to develop and maintain his pianistic abilities. What many pianists also realize is that practicing is sometimes more effective than others, or in other words, that it matters not only that one practices, but also how one practices. As testimonials as well as numerous publications attest, questions surrounding the central one of how best to practice are often considered by performers and pedagogues alike. If an ability is indeed continually malleable and

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13 Cf. discussion of Ulric Neisser’s “Perceptual Cycles.”

develops in going through a relevant act, then how one goes through that act would matter to what sort of ability one develops. Every act of playing, then, – whether it is in performance or a practice session – subtly shapes a pianist’s abilities, an important part of which is the quasi-instantaneous coordination between haptic and auditory perceptual activity. The focus on sound quality provides a particular perspective on piano performance which foregrounds the dynamic variability of the act.

Critical Ethnography: Factors in Performance Ability

My approach to piano playing is rooted in work in critical ethnography as well as theories of cognitive function. These two seemingly disparate areas of enquiry share important common ground in their treatment of conceptualization and experience as mutually definitive. An underlying theme throughout this research is the dynamic interplay between theoretical understanding and lived experience.

Qualitative ethnographic methods, especially the in-depth interview, were used in several discussions, and the collected material readily suggests further work. Experiences of conservatory training as well as professional concertizing can be brought to bear in important ways on concepts such as the musical work, pianistic lineages and traditions, the substance of interpretative work, or the perceived role of the performer in classical music, to name a few.

15 All chapters of this dissertation include excerpts from interviews and accompanying commentary. The interviews are with piano technician Alex Cowell, composer and pedagogue Dr. Philip Lasser, and pianists Geoffrey Duce and Amir Khosrowpour.
Very often, in dealing with such interview data, a positive or negative valence to many of the musicians’ statements is readily discernable: musicians describe both positive and negative experiences, although almost never in categorical terms. Thus, these personal statements readily point to factors, both subtle and apparent, which may contribute to, or conversely, detract from a performance experience. In working with multiple interviews, as well as personal experience, patterns begin to emerge, which point to both constructive and hindering practical effects of common concepts and beliefs. They also point to the variable utility of common practices.

Analysis of material gathered through interviews or other methods of enquiry into personal experience can be a powerful tool in facilitating the development and maintenance of performance ability. As many musicians repeatedly discover, performing experience can be both petrifying as well as elating. Identifying and understanding factors which make or contribute to that difference can be important to the overall health of classical performance practices. Furthermore, positive performance experience is often correlated with artistic effectiveness, which suggests that fostering positive performance experience may also create fortuitous conditions for positive audience experience.16 Such questions all point to the likely utility of collecting and analyzing experiential data, as well as incorporating such data into both theoretical and research work of both predominantly humanistic of predominantly scientific nature.

Looking ahead, I hope to continue developing studies like the pilot study conducted at the Computer Music Center at Columbia University,\textsuperscript{17} which creates a particular performance situation while still leaving room for an open-ended, non-constricted experience. The study is motivated by both broadly theoretical issues, in this case about the intersection of physical phenomena and personal experience, as well as a more narrow hypothesis about the correlation between haptic and auditory experience in piano performance. While I am not able to devise a test which might offer insight into the neurological makeup of an enhanced audio-haptic correlation, experiential accounts do suggest the correlation, and thus may open fertile ground for collaborative research. Gathering and analyzing experiential data can be a springboard for both formulating large theoretical issues, as well as devising more circumscribed, experimental procedures. Either way, it opens possibilities for addressing and perhaps positively impacting performance experience, which will continue to be a central motivation in my future work.

\textsuperscript{17} Cf. Chapter III.


