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Attitudes And Thoughts On Tone Quality In Historic Piano Teaching Treatises

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ATTITUDES AND THOUGHTS ON TONE QUALITY IN HISTORIC PIANO TEACHING TREATISES

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DEDICATION

To my mother.

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ABSTRACT

Various approaches to the perception and production of tone quality on the piano have been suggested throughout the history of piano pedagogy. Tone quality differences are controversial among physicists, acoustic scientists, pianists, and piano pedagogues. Studies and research began to investigate tone quality with scientific experiments, and physicists and scientists asserted that differences in tone quality are differences in pitch, intensity, duration, and in combinations of tone and noise. They asserted that tone quality does not change with different physical touches and the pianist cannot control the quality of the tone. However, pianists and pedagogues believed that pianists have control over tone quality. They claimed that quality-differences were achievable by the act of touch as well as the mental conception of tone, but that they could not be proved scientifically. Due to differences of thoughts among various music and scientific disciplines, there are widely variant opinions on what constitutes a beautiful and desirable tone, and how it is produced on the piano. This study examines the thoughts and attitudes on tone quality in historical piano teaching treatises.

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CHAPTER 1

INTRODUCTION

A beautiful tone is one of the primary goals in all music-making. However, what constitutes a beautiful or desirable tone is controversial among physicists, acoustic scientists, pianists, and piano pedagogues. Numerous methods and writings were written based on their studies and experiences. Physicists and acoustic scientists assert that differences in tone quality are differences in pitch, intensity, duration, and in combinations of tone and noise (i.e., the noise of the finger falling on the key. The noise amalgamates with the nearly synchronous tone and modifies the total overtone constellation).[1] John Backus, the author of *The Acoustical Foundations of Music*, argues that the pianist cannot control the quality of the tone.[2] However, composers, pianists and pedagogues believe that pianists have control over tone quality. Numerous methods and books pertaining to tone quality began to appear and various findings and opinions based on either scientific experiments or personal experiences were published by such authors as Matthay[3] (1905), Helmholtz[4] (1912), and Ortmann[5] (1922). Arnold Schultz, in his book *The Riddle of the Pianist's Finger*, stated that "qualitatively beautiful tone gained

[1] Siegmund Levarie, and Ernst Levy. *Tone: A Study in Musical Acoustics*. (Westport, Conn: Greenwood Press, 1981).

[2] John Backus. *The Acoustical Foundations of Music*. (New York: W.W. Norton & Company Inc. 1977), 291-293.

[3] Tobias Matthay. *The Act of Touch in All Its Diversity: An Analysis and Synthesis of Pianoforte Tone-Production*. (London: Longmans, Green and Co, 1903).

[4] Hermann L. F. Helmholtz. *On the Sensations of Tone*. (Dover Publications, Inc., New York, 1954).

[5] Otto Ortmann. *The Physical Basic Basis of Piano Touch and Tone*. (London: K. Paul, Trench, Trubner & Co. Ltd, 1925).

considerable ground after 1800 but was not a principal concern of the performing artist or the listener. It had become one of the major emphases of piano-playing by 1900. Since then 'qualitatively beautiful tone' became one of the most important measurements of a pianist's artistry." [6] Due to the differences of thoughts among various music and scientific disciplines, there are widely variant opinions on what constitutes a beautiful and desirable tone, and how it is produced on the piano. Therefore, examination of the thoughts and attitudes on tone quality in historical piano teaching treatises is a valuable means of trying to organize and quantify these ideas.

1.1 PURPOSE OF THE STUDY

In the late nineteenth century, studies and research began to investigate tone quality with scientific experiments. The experiments conducted by acoustic scientists and physicists revealed that tone quality does not change with different physical touches. On the other hand, piano pedagogues and pianists strongly believed that the mental conception of tone is the essential key, and it cannot be proved scientifically. Controversy between who believes in the scientific approach and who distrusts such experiments seems to be irreconcilable. However, only a limited amount of research concerning tone quality on the piano has been done. More often tone quality has been only briefly discussed as an aspect of technique in writings and research on the development of piano technique. Tone quality is frequently regarded as a secondary element which can be naturally acquired after mastering certain techniques or the physical mechanism.

[6] Arnold Schultz. *The Riddle of the Pianist's Finger: And Its Relationship to a Touch-Scheme*. (Chicago, III: The University of Chicago Press, 1936), 194-195.

The purpose of this study was to research sources of information pertaining to tone quality and determine the various aspects which can affect the quality of tone production on the piano. With the development of the instrument and the musical demands of the time period, pedagogical thoughts have evolved and diversified. Investigating the historical perspectives and pedagogical thoughts on the quality of tone by influential pedagogues and pianists is necessary and required. The physical, psychological and technical aspects, scientific experiments and facts, mental and artistic points of view are briefly discussed in an historical context.

1.2 NEED FOR THE STUDY

With the development of the piano mechanism, pedagogical thoughts have changed, so it is necessary to examine and research how the perception of tone quality has evolved. The insights and thoughts of major pedagogues, composers, and pianists could greatly help the understanding of what affects tone quality, and could be a valuable source and provide new perspectives on piano playing and teaching.

1.3 LIMITATIONS OF THE STUDY

The study of piano tone quality is complicated and multi-faceted. This study is limited to an examination of thoughts and attitudes on tone quality in historical piano teaching treatises. The development of the piano and the piano action mechanism is briefly discussed as it relates to authors' discussions in the treatises. The construction, acoustical and scientific aspects of the piano are briefly discussed as they relate to the authors' attitudes and thoughts on tone quality in historical treatises, but the focus of the study remains an examination of tone quality in historic piano teaching treatises.

1.4 RELATED LITERATURE

The literature relating to tone quality can be divided into several categories: historical development of the piano and playing technique, construction of the piano, and scientific aspects including acoustics and physics. Daniel Gottlieb Türk's *School of Clavier Playing* is an important source book. It includes extensive treatment of ornamentation and expressive details. In *School of Clavier Playing*, Türk considers "beautiful tone must be clear, full, supple, bright, and above all, agreeable; it follows that it should not be harsh at even the highest degree of loudness or unclear at a pianissimo. But since it is the purpose of music to express feelings of various types, then to these qualities of a beautiful tone must be added the expression of the music's character."[7]

Tobias Matthay and his works *The Visible and the Invisible in Pianoforte Technique* [8] and *The Act of Touch* [9] are significant for their contributions in areas such as touch, phrasing, use of arm weight and relaxation. On the matter of tone quality at the piano, Matthay strongly believed that the quality-differences were achievable by the act of touch. He stated that "The greater the total speed we induce during each individual key-descent, the greater is the Tone-*Quantity*. The more gradually this key-speed is attained, the more beautiful is the Tone-*character*, -the fuller, more "sympathetic," singing and carrying is its *quality*. The more sudden the key-depression, the harsher is the resulting Tone-quality; it may be more "brilliant" but it will be less effective in carrying power."[10]

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[7] Daniel Gottlob Türk, and Raymond H. Haggh. *School of Clavier Playing, or, Instructions in Playing the Clavier for Teachers & Students*. (Lincoln: University of Nebraska Press, 1982).

[8] Tobias Matthay. *The Visible and the Invisible in Pianoforte Technique*. (London: Oxford University press, 1932).

[9] Tobias Matthay. *The Act of Touch in All Its Diversity: An Analysis and Synthesis of Pianoforte Tone-Production*. (London: Longmans, Green and Co, 1903).

[10] Ibid., 89.

Otto Rudolf Ortmann organized the research department at the Peabody Conservatory and conducted research in piano technique. In his books *The Physical Basic Basis of Piano Touch and Tone*,[11] and *The Physiological Mechanics of Piano Playing Technique* [12] Ortmann questioned the effect of finger-stroke upon tone-quality. He stated that "However fanciful our conception of the artistic phases of piano touch may be, whatever poetic qualities we assign to the piano tone, the fact remains that percussion and intensity are the only determinants. All differences in tonal qualities must show in the degree of percussiveness and in the velocity of the finger-stroke."[13]

In *Basic Principles in Pianoforte Playing*, Josef Lhevinne considered mental conception and technical qualification as a requisite for producing a beautiful tone quality at the piano. He stated that "In the first place, every piano student who aspires to acquire a beautiful tone must have a mental concept of what a beautiful tone is… In order to produce good tone, using the well-cushioned part of the finger and flexible wrist is essential along with the mental conception."[14] Lhevinne's work provides valuable and empirical approaches to piano technique.

Arnold Schultz examines the works of Theodor Leschetiszky, Tobias Matthay, Rudolf Breithaupt, and Otto Ortmann. In the chapter on "Tone-Quality", Schultz emphasized the importance of legato and intensity control. He stated that "so-called ugly tone is always piano-playing in which the legato is highly unsatisfactory… so-called

[11] Otto Ortmann. *The Physical Basic Basis of Piano Touch and Tone: An Experimental Investigation of the Player's Touch Upon the Tone of the Piano*. (London: K. Paul, Trench, Trubner & Co. Ltd, 1925).

[12] Otto Ortmann. *The Physiological Mechanics of Piano Playing Technique: An Experimental Study of the Nature of Muscular Action As Used in Piano Playing, and of the Effects Thereof Upon the Piano Key and the Piano Tone*. (London: K. Paul, Trench, Truber & Co, 1929).

[13] Ibid., 243.

[14] Josef Lhevinne. *Basic Principles in Pianoforte Playing*. (New York: Dover, 1972).

beautiful tone-quality are found to depend upon the controlled key-descent".[15] Schultz also provided various touch-forms which are considered strongly related to legato and tone-quality.

Jozsef Gat discussed "tone and tone-coloring possibilities of the piano" in the first chapter of his book, *The Technique of Piano Playing*. He summarized the facts of physics experiments on the piano, and acknowledged Helmholtz's point of view: "The tone color does not depend upon the pianist but on the constructions of the instrument… mainly on the type of the coating of the hammer and on the quality of the felt." He also referred to three different groups of noises. He stated that "As noises will always start simultaneously with the musical notes, they must be taken into consideration in the development of the sensation of tone colour because the tone colours are evidently produced by the whole complex of sound impressions affecting us."[16] The book delineates Gat's physiological approach to the piano and piano technique.

Walter Gieseking and Carl Leimer emphasized "critical self-hearing" in *Piano Technique*. They stressed that "it is by far the most important factor in all music study… through a continuous self-hearing, the sense for tone beauty and for finest tone shadings can be trained to such a degree that the student will be enabled to play the piano with an irreproachable technique and with a feeling for the sound-beautiful."[17] The book is based on traditional weight technique, and stresses detailed analysis, musical imagination, and intense concentration.

[15] Arnold Schultz. *The Riddle of the Pianist's Finger: And Its Relationship to a Touch-Schme*. (Chicago, III: The University of Chicago Press, 1936).
[16] Joszef Gat. *The Technique of Piano Playing*. (Trans. Istvan Kleszky. London: Collet's, 1974).
[17] Walter Gieseking and Karl Leimer. *Piano Technique*. (New York: Dover, 1972).

Among the various writings on piano tone quality, Reginald R. Gerig's *Famous Pianists and Their Technique* [18] includes important historical source materials, and presents valuable thoughts and insights regarding techniques of major performers and teachers. Tone quality is dealt with as a part of technique in this comprehensive work. Another valuable source is Jacob N. Helmann's *The Consciously Controlled Piano Tone*.[19] The book examines scientific aspects, physical and mental approaches, and their application to playing. The entire book is devoted to tone quality and controlled physical motion.

Randall N. Wolfe investigated scientific aspects that defined the factors which influence tonal results in his thesis "The Pianist's Control of Tone Quality".[20] Wolfe provided valuable sources of information regarding physics, acoustics, and aural perceptions of tone quality. Wolfe considered emotional aspects and subjectivity on perceiving tone and its quality along with scientific aspects. Ching-Yu Ho's thesis "The Singing Piano"[21] examined the characteristics of piano tone and the creation of a beautiful singing tone quality. Ho provides three chapters and each chapter emphasizes piano construction aspects, psychological aspects, and major composers and their pianos.

Among the literature related to scientific aspects on tone quality, *The Physics of Musical Instruments*,[22] by Neville H. Fletcher and Thomas D. Rossing provides the details of sound production by traditional instruments. Constructional aspects of the piano

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[18] Reginald R. Gerig. *Famous Pianists & Their Technique*. (Bloomington: Indiana University Press, 2007).

[19] Jacob N. Helmann. *The Consciously Controlled Piano Tone.* (Denver: Columbia Press, 1969), 1969.

[20] Randall N. Wolfe. "The Pianist's Control of Tone Quality." (University of Cincinnati, 1991).

[21] Ching-yu Ho. "The Singing Piano." (PhD diss., University of Illinois, Urbana Champaign, 2000).

[22] Neville. H. Fletcher and Thomas D. Rossing. *The Physics of Musical Instruments*. 2nd Ed. (New York: Springer, 1997).

including general design, actions, pedals, strings, hammer, and soundboard are examined. The book also investigates tuning and inharmonicity (i.e., the deviation of a set of frequencies from an exact harmonic series. The degree of inharmonicity can have a significant effect on the perceived timbre of the sound),[23] dynamics, and timbre as they related to how these elements are affecting the sound quality of the piano.

Abundant articles from professional scientific journals and magazines focus on quality of tone and address scientific points of view. William Braid White investigated the relationship between intensity and quality of sound, and provided findings and results of his investigation in the article "The Human Element in Piano Tone Production." White claimed that "the velocity of the hammer at the moment of its contact with the string is the factor in production of tone which the musician can control."[24] He stated that the total distance of the key activates the hammer is 3/8 inch, and by the time the key has reached the keybed, the hammer has struck the string and has already rebounded. He reaffirmed that "it is not possible for a pianist to obtain from the same note two sounds of different color-values without a corresponding change of loudness."[25]

Harry C. Hart, Melville W. Fuller and Walter S. Lusby also conducted scientific experiments on loudness and tone quality and presented their findings in the article "A Precision Study of Piano Touch and Tone." They claimed that pianists' varied technique of striking meant nothing but the ability of controlling loudness more precisely and easily.[26] The experiments were comparing the manners of striking key produced by the

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[23] Murray Campbell. "Inharmonicity," *Grove Music* Online, https://doi-org.pallas2.tcl.sc.edu/10.1093/gmo/9781561592630.article.13801 (accessed January 26, 2017).

[24] William Braid White. "The Human Element in Piano Tone Production." *The Journal of the Acoustical Society of America* 1 (1930): 358.

[25] Ibid., 357-365.

[26] Harry Hart, Melville Fuller and Walter Lusby. "A Precision Study of Piano Touch and Tone." *Journal of the Acoustical Society of America* 6 (1934): 91

skilled pianists and a mechanical striker. The results showed that two impacts were identical in their sound wave form if the hammer velocity was same. They concluded that "actually the pianist can do nothing to vary his tone except to vary the final hammer velocity; and that in so doing he inevitably varies the loudness too."[27] In the article "Piano Touch", Carl E. Seashore stated that "the only way in which the pianist can produce qualitative changes is through dynamic and temporal changes, and then only within the limits set by the characteristics of the instrument."[28] The article "Touch and Tone-Quality: The Pianist's Illusion" by E. O. Turner stated that tone quality is not influenced by the form of touch, and harsh tone is nothing more than playing too loud.[29] He added, "Velocity, phrasing, light and shade, legato and staccato: these are some of the problems of touch, but tone-control, no!"[30] He affirmed, "alter the velocity, change the key-speed, play louder or softer, and the tone will vary; but there is no other way: all else is an illusion."[31]

However, Donald N. Ferguson acknowledged physicists' and scientists' assertions on the nature of the piano action as being nothing more than variations of loudness and softness but strongly believed that the character of the attack and the quality of tone were related, and flexibility produced beautiful tone. Anders Askenfelt examined the motion of the piano hammer, the influence of dynamic level and the pianist's touch in his article "Measuring the Motion of the Piano Hammer During String Contact." He concluded that the motion of the hammer before string contact can be very different depending on the

[27] Ibid.
[28] Ibid., 365.
[29] E.O. Turner. "Touch and Tone-Quality. The Pianist's Illusion." *The Musical Times* 80, no. 1153 (1939): 175.
[30] Ibid.
[31] Ibid., 174.

type of touch, and dynamic level influences the initial angle of the hammer head change.[32]

Ferguson's article "The Secret of the Pianist's Beautiful Touch" included thorough investigations of touch and tone. Ferguson considered "tone as an element of the musical idea, and tone should be mentally heard in its proper relation to the whole musical idea before the keys are struck."[33] A recent study related to the acoustical effects of different touch forms on the piano was conducted by Werner Goebl, Roberto Bresin and Ichiro Fujinaga. In the article "Perception of Touch Quality in Piano Tones," they investigated whether different ways of touching the keys affected the quality of a sound on the piano. They stated that "the sound parameters related to touch are perceived as part of the piano tone and help to invoke a sense of the way the particular piano tone was produced."[34] Based on their investigation, they put weight on the musicians' argument that touch qualities are indeed transmitted through the auditory domain.[35]

1.5 DESIGN AND PROCEDURES

The study comprises four chapters and a bibliography. Chapter 1 includes an introduction, the purpose of and need for the study, limitations of the study, related literature, and design and procedures. Chapter 2 consists of an examination of historical treatises from 1750 to 1900. Chapter 3 consists of an examination of historical treatises from 1900 to the present. Chapter 4 consists of a summary and conclusions.

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[32] Anders Askenfelt. "Measuring the Motion of the Piano Hammer During String Contact." *Trita-TÖM.* (1991): 19-34.

[33] Donald N. Ferguson. "The 'Secret' of the Pianist's Beautiful Touch." *The Musical Quarterly* 10 (1924): 384-399.

[34] Werner Goebl, Roberto, Bresin, and Ichiro, Fujinaga. "Perception of Touch Quality in Piano Tones." *The Journal of The Acoustical Society of America* 136, no. 5 (November 2014): 2849.

[35] Ibid.

CHAPTER 2

LATE EIGHTEENTH AND NINETEENTH CENTURY

Various aspects can affect the quality of tone production on the piano, and sources of information pertaining to tone quality were examined. Pedagogical thoughts on tone quality have evolved and diversified with the development of the instrument and the musical demands of the time period. At the beginning of the eighteenth century, Bartolommeo Christofori built the first *gravicembalo col piano e forte*, "harpsichord with soft and loud." It was capable of producing a variety of dynamic levels. Christofori is credited as the inventor of the escapement action which is a principal feature of the piano. Escapement can be described as a non-blocking action system. The escapement mechanism allows the hammers to immediately rebound and not block the vibrations of the strings even if the key is still depressed. It enables the hammer to be lifted towards the strings, yet allowing the hammer to be disengaged right before striking the strings. This free flight of the hammer enables the pianist to control the speed of the hammer to strike the string, and the loudness of the sound.[36]

As the nineteenth century progressed, piano-makers endeavored to increase the thickness and the tension of the strings to produce a larger volume of tone from the pianoforte, and the advanced hammer action to be responsive and quick. The total tension of the string increased greatly therefore, all wooden structure was beginning to be

[36] Ripin, Edwin M. and Stewart Pollen. "Pianoforte," *Grove Music* Online, https://doi.org/10.1093/gmo/9781561592630.article.21631 (accessed January 26, 2017).

replaced with metal to resist the considerably increased tension. The tuning of the piano was also stable after the structure was strengthened by the application of the metal bars. The piano evolved into a heavier and more sonorous instrument.

Early teaching methods which were written not specifically for the pianoforte, but the clavichord and harpsichord. Pedagogues kept the technique based upon finger attack and economy of movement, with the upper arm remaining still in the tradition of the harpsichord and clavichord technique. Numerous mechanical training exercises were composed for the development of finger technique. Pianists had adjusted their technique to increase their finger strength. Technical discussions became an important part of teaching. By the late nineteenth century, the piano had evolved with the developments of double escapement, strengthened strings and structure, pedals and increased range. These developments demanded that keyboard technique to be modified from the finger technique to a more weighted touch to operate the heavier action. This chapter discusses how pedagogical thoughts on the tone quality changed in the nineteenth century.

2.1 DANIEL GOTTLIEB TÜRK (1750-1813)

Daniel Gottlieb Türk's the *Klavierschule* (1789) was a significant instructional treatise in the eighteenth century and included the basic principles of music, fingering, ornamentation, and execution. Türk discussed his thoughts regarding beautiful tone in relation to principles of execution. He stressed the importance of good execution and enumerated the required characteristics for good execution:

> Good execution, therefore, is the most important, but at the same time, the most difficult task of making music. In my opinion, the following characteristics are particularly typical of good execution: (1) in general, an already achieved facility in playing and note reading, security in rhythm, and knowledge of thoroughbass as well as of the composition to be performed; but in particular (2) clarity of execution, (3) expression of the predominant character, (4) appropriate use of

> ornaments and other devices of the same sort, and (5) genuine feeling for all the emotions and passions which are expressed in music.[37]

Türk wrote that "a beautiful tone is a requisite for good expression," and further defined the characteristics of beautiful tone:

> A beautiful tone must be clear, full, supple, bright, and above all, agreeable; it follows that it should not be harsh at even the highest degree of loudness or unclear at a pianissimo. But since it is the purpose of music to express feelings of various types, then to these qualities of a beautiful tone must be added the expression of the music's character. "The most beautiful tone" writes Sulzer, "is that tone which takes upon itself every mode of expression, and in all the shadings of *forte* and *piano* remains both clear and bright."[38]

He regarded expression as an important aspect of good execution. He wrote, "Expression is therefore that part of a good execution in which the true master, full of genuine feeling for his art, distinguishes himself noticeably from the average musician."[39] Türk listed three indispensable components of expression: (1) the suitable degree of loudness and softness of tone, (2) the detaching, sustaining, and slurring of tones, and (3) the correct tempo.[40] Regarding proper and good style of execution, Türk stressed that, before students learned other techniques, students should learn to use a sustaining touch to create singing quality.[41] Türk also emphasized a spiritual mindset over mechanical skill to attain an expressive quality of music:

> Mechanical skill can ultimately be learned by much practice; only expression presupposes-other than mechanical facility-a broad range of knowledge, and above all things, a sensitive soul. It certainly would be a futile endeavor, therefore, if one were to attempt to enumerate in order everything that is required for expression and to specify all of this through rules, because expression depends so much on that which no rule can teach, namely on the individual feelings themselves.[42]

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[37] Daniel Gottlob Türk, and Raymond H. Haggh. *School of Clavier Playing or Instructions in Playing the Clavier for Teachers & Students*. (Lincoln: University of Nebraska Press, 1982)., 321-322.
[38] Ibid., 354.
[4] Ibid., 337.
[40] Ibid., 338.
[41] Ibid., 27.
[42] Ibid., 337.

He further elaborated on the attainment of a beautiful tone:

> The achievement of a beautiful and singing tone must be a matter of the most extreme importance for the clavichord player. In this regard, I would particularly advise those who still do not have a good tone to play a number of notes of long duration often, striking the keys with only moderate strength and to press them down only as long as is necessary for the tone to reach its maximum strength, but not beyond the point when (by exerting even greater pressure) the pitch of the tone would become higher. One accustoms oneself through this practice to a very supple stroke, which is even required for maximum strength.[43]

Although Türk's *Klavierschule* was written principally for the clavichord, it encompassed the aesthetic and pedagogical views of his time and was an invaluable source regarding tone quality and expressive performance practices of the late eighteenth-century.

2.2 MUZIO CLEMENTI (1752-1832)

Muzio Clementi enjoyed an international reputation as a composer, keyboard player and teacher, music publisher, and pianoforte manufacturer in the late eighteenth and early nineteenth centuries. He was renowned for his didactic works and for the improvements he made to the piano's structure and mechanisms. As a pedagogue, he wrote important didactic works, including *Introduction to the Art of Playing the Pianoforte*,[44] published in 1801, and *Gradus ad Parnassum*,[45] published between 1817 and 1827.[46] Clementi wrote *Introduction to the Art of Playing the Pianoforte* for the education of beginner and amateur pianists. He included music fundamentals, such as musical notation and elementary theory, fingering, and finger exercises, and provided a

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[43] Ibid., 355.

[44] Muzio Clementi. *Clementi's Introduction to the Art of Playing on the Piano Forte*. London: Clementi, Banger, Collard, David & Collard, 1801; reprinted., (New York: Da Capo Press, 1974).

[45] Muzio Clementi. *Gradus ad Parnassum: l'art de jouer le pianoforte*, (Leipzig: Breitkopf & Härtel, n. d.).

[46] Reginald R. Gerig, *Famous Pianists & Their Technique*. (Bloomington: Indiana University Press, 2007), 59.

collection of fifty short pieces by various composers. Clementi arranged the pieces by key and not by technical difficulty. Pedaling was not mentioned in the original *Introduction to the Art of Playing the Pianoforte*, but the fifth edition included a brief explanation of the tre corde: "Ped: signifies to put down the pedal, which raises the dampers; and this mark 𝄮 to let it go again."[47]

As a famous and accomplished teacher, Clementi taught many noteworthy students, including John Field, John Cramer, Madame Gaetano Bartholozzi, Ludwig Berger, Benoit Auguste Bertini, Johann Hummel, Alexander Klengel, Charles Mayer, Giacomo Meyerbeer, Friedrich Kalkbrenner, Ignaz Moscheles, and Karl Traugott Zeuner. Field, Cramer, and Kalkbrenner, three of the most popular and influential pianists of their day, were admired for their cantabile, legato playing style. Among Clementi's many students, John Field was noted for his influence on Chopin, who passed the Clementi style on to his students.[48] Clementi's expressive legato style was considered a significant aspect of his mature playing. Moscheles recorded in his diary about Clementi's performance at a retirement banquet given for Clementi in 1827:

> Of course a wish was expressed and rapturously applauded, that Clementi, the father of pianoforte, should be heard on this occasion, and thus prove his right to the title… Clementi's pianoforte playing, when he was young, was famed for the exquisite legato, pearliness of touch in rapid passages, and unerring certainly of execution. Even now the remains of these qualities were recognized and admired.[49]

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[47] Clementi Muzio. Introduction to *Introduction to the Art of Playing on the Piano Forte*, by Sandra P. Rosenblum (New York: Da Capo Press, 1974), xiv.

[48] Donna R Bashaw. *The Evolution of Philosophies and Techniques of Piano Pedagogy from 1750 to 1900: Traced Through the Teachings of C.P.E. Bach, Clementi, Czerny, Chopin, and Leschetizky*. (Master's thesis, California State University, Fullerton, 1980), 48.

[49] Leon Plantinga. *Clementi: His Life and Music*. (London: Oxford University Press, 1977), 292.

Regarding his exquisite legato, Clementi provided physical and technical direction in the *Introduction to the Art of Playing the Pianoforte*:

> The hand and arm should be held in an horizontal direction; neither depressing nor raising the wrist; the seat should be therefore be adjusted accordingly. The fingers and thumb should be placed over the keys, always ready to strike, bending the fingers in, more or less in proportion to their length. All unnecessary motion should be avoided. Let the pupil now begin to practice, slowly at first, the following passage; observing to keep down the first key 'till the second has been struck, and so on.[50]

Clementi also emphasized the importance of the overall use of legato. He wrote,

> When the composer leaves the staccato and legato to the performer's taste; the best rule is, to adhere chiefly to the legato; reserving the staccato to give spirit occasionally to certain passages, and to set off the higher beauty of the legato.[51]

During the eighteenth century, the basic keyboard touch had been non-legato. Therefore Clementi's emphasis on a legato style of playing was quite different from the articulation of performance practice in his time.[52] According to Ludwig Berger, Clementi noted that his style of playing had changed:

> In those early days he still preferred to display his talents by brilliant execution, especially in double-note passages which were not customary prior to him, and in improvisations; only later had attentively to singers celebrated at the time, and also through the gradual perfection particularly of the English pianos, whose earlier faulty construction virtually precluded a cantabile, legato style of playing.[53]

Berger's conversations with Clementi revealed the "association of the new legato style with developments in piano manufacture".[54] Clementi recognized two distinct playing

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[50] Clementi. *Introduction to the Art of Playing*, 14-15.
[51] Ibid., 9.
[52] Bernard Harrison. "*The Revision of Clementi's Opus 2 and the Transformation of Piano Performance Style*," in *Muzio Clementi: Studies and Prospects*. ed. by Roberto Illiano, Luca Sala, and Massimiliano Sala (Bologna: UT Orpheus, 2002), 307.
[53] Rosenblum. Introduction, xi.
[54] Harrison. "*The Revision of Clementi's*, 311.

styles, the Viennese and the London styles, that developed with the quality of pianofortes:

> The instruments of Vienna and those of London have given rise to two different styles of playing. The performers of Vienna are remarkable for the precision, clearness, and rapidity of their execution: the instruments made in that city are also very easy to play upon, and in order to avoid confusion of sound, they have dampers as far as the highest F, which occasions a great dryness of tone, particularly in passages of flowing melody. In Germany the use of the pedal is hardly known.
>
> The English instruments have a fuller tone, and a touch somewhat heavier, which have given to the performers of that country, that fine style of playing, and that delightful manner of making their notes flow into each other, for which they are so distinguished. For acquisition of this style, the damper pedal is indispensably necessary, as it corrects that dryness of sound which otherwise belongs to all Piano Fortes.[55]

Clementi was associated with the English instrument and was actively involved in the manufacture and development of the English pianoforte. He acknowledged that gradual improvements in the construction of the English pianoforte made it possible for him to develop a legato technique and expressive style. The construction quality of pianofortes by Clementi's company was reported as being "enhanced by Clementi's mechanical ability and artistic experience."[56] His company's name became synonymous with high quality materials and workmanship. In 1802, the *Allgemeine Musikalische Zeitung* described Clementi's pianos "as being the finest in the world, but also among the most expensive."[57] Clementi's letters to his business partner, written from 1803 to 1806 disclose his contributions to the development of the pianoforte. In the letters, Clementi expressed criticism about "using properly seasoned wood for pianos."[58] In a letter to

[55] Ibid., 312-313
[56] Plantinga. *Clementi: His Life and Music*, 295.
[57] Dorothy de Val. "Clementi as Entrepreneur" in *Muzio Clementi: Studies and Prospects*. ed. by Roberto Illiano, Luca Sala, and Massimiliano Sala (Bologna: UT Orpheus, 2002), 327.
[58] Plantinga. *Clementi: His Life and Music*, 295.

Härtel of the publishing house of Breitkopf and Härtel in Leipzig in 1826, Clementi mentioned "further improvements concerning resistance to heat and cold and a new method of stringing instruments."[59] The letters indicate that Clementi recognized the importance of using quality materials for the pianoforte and that his expertise contributed to vast improvements in pianoforte structure. Several patents were registered in the name of his business partner William Frederick Collard, who was a specialist in tone production.[60] Through the changes in the hitch pinblock and the wrest pinblock, and the placement of the hammers and dampers on upright pianos, the tone was improved and the stringing process was eased.[61] In 1811, a patent registered related to these changes and improvements. In 1821 the company patented the 'harmonic swell' and 'bridge of reverberation.'[62] The harmonic swell defined as, "A device whereby an extra undamped length of string produces a rich but clear sound with high-pitched sympathetic vibrations; because the resonances are well above the normal playing pitch of the instrument, there is no muddiness of tone."[63] The bridge of reverberation was "a second bridge and, by lifting a valve, the performer allowed the strings between the two bridges to vibrate sympathetically with the ordinary vibrating strings."[64] Those two inventions enhanced the instruments' rich and powerful sound quality by adding all the overtones, which sounded sympathetically from the strings between the two bridges.[65] Although Clementi's

[59] Ibid.
[60] Margaret Cranmer and Peter Ward Jones. "Clementi," *Grove Music* Online, https://doi.org/10.1093/gmo/9781561592630.article.05937 (accessed January 26, 2017).
[61] Bashaw. *The Evolution of Philosophies*, 36.
[62] Val. "Clementi as Entrepreneur," 331.
[63] Cranmer and Jones. "Clementi," *Grove Music* Online.
[64] Val. 331.
[65] Ibid.

contribution was not documented in detail, his artistic experience contributed to the development of the pianoforte and its tone quality.

Clementi played a significant role as an important teacher, pedagogue, composer, keyboard player, and manufacturer. His didactic work has been considered the important treatise written about the pianoforte. His expressive legato style of playing, didactic works for the pianoforte, and contribution on the development of tone quality and structure of the English pianoforte were influential in the late eighteenth and the early nineteenth century.

2.3 CARL CZERNY (1791-1857)

Carl Czerny was an accomplished and dedicated teacher. Czerny's students included Sigismund Thalberg, Theodor Döhler, Theodore Kullak, Theodore Leschitiszky, and Franz Liszt. Many of his outstanding students expressed their indebtedness to Czerny's contributions to nineteenth century piano pedagogy. Czerny wrote the didactic work *Klavierschule* (Keyboard School) in 1839. It was published in London under the title *Complete Theoretical and Practical Pianoforte School, from the First Rudiments of Playing, to the Highest and most Refined State of Cultivation; with The Requisite Numerous Examples, Newly and Expressly Composed for the Occasion, Opus 500*. [66] The work comprised four volumes. The first volume contained nineteen lessons on piano fundamentals and beginning technical materials such as scales and arpeggios. The second volume included sixteen chapters devoted to fingering. The third and the most

[66] Carl Czerny. *Complete Theoretical and Practical Piano Forte School, From the First Rudiments of Playing, to the Highest and Most Refined State of Cultivation; with the Requisite numerous Examples, Newly and Expressly Composed for the Occasion*. 3 vols. Opus 500. (London: R. Cocks & Co., 1839).

comprehensive volume contained twenty chapters on interpretative details and expression topics such as dynamics, rhythm, tempo, touch, style, memory, public performance, pedaling, sight reading, improvising, and tuning the instrument. A fourth volume included discussions of the performance styles of the day and interpretations of notable composers, such as Beethoven. In the preface of *Complete Theoretical and Practical Piano Forte School*, Czerny acknowledged the improved quality of the pianoforte and its status in his time:

> Every succeeding year, Pianoforte playing is more widely cultivated and more highly rated in public estimation. The instrument itself is constantly receiving progressive improvements both as to its tone, and to the manner of treating it. Melody, that noblest branch of the art, can now be expressed on it, in the fullest and richest tones, and most varied shades of expression. …the Pianoforte can never be displaced, nor even thrown into the shade by any other instrument…[67]

Czerny enumerated the indispensable properties of the pianist: purity and precision in his playing, correctness in keeping time, quickness and correctness in reading the notes, a firmness in striking the keys, the power of producing a fine full tone, correct fingering, great lightness and volubility of the fingers in both hands and an exact observance of the customary marks indicating expression.[68] Among the listed properties, Czerny stressed the utmost importance of fingerwork agility and a firm touch to produce adequate quality of sound and playing. He explained the importance of producing a fine tone on the pianoforte in a letter from *Letters to a Young Lady, on the Art of Playing the Pianoforte*:

> From every musical instrument we may produce either a fine tone or a detestable one, *according as we handle it*. The same excellent violin which, in the hands of a clever player, sounds so delightfully, will, when handled by a clumsy person, yield as disagreeable sounds if a number of kittens were squalling. It is the same with the pianoforte. If it is not properly handled by the player, or if we merely thump and bang the keys, the best instrument will sound hard and unpleasant. On the other hand, if we employ too little force, or do not know how to use this

[67] Ibid., Volume I, i.
[68] Ibid., Volume III, 1.

> power in a proper manner, the tone will be poor and dull, and the performance unintelligible, and without soul or expression. [69]

He enumerated appropriate ways to approach the keys:

> First. Strike each key perpendicularly; that is straight downwards, and exactly in the middle, and therefore not sideways nor obliquely. Secondly. When, after the percussion, each key is so firmly pressed down as to cause the full tone of the instrument to be audible. Thirdly. When, before the percussion, we do not raise the finger too high; as otherwise, along with the tone, there will be heard the blow on the key. Fourthly. When the hand and arm, even when striking with considerable force, do not make any jumping, chopping, or oscillating movement. For you will find, Miss, that the fingers cannot possibly play pleasantly and tranquilly when the hands and arms are unsteady. Fifthly and lastly. When the player observes all these rules in rapid runs, or even in skips and extensions, as strictly as in slow and quiet passages.[70]

Czerny believed that various dynamic levels expressed certain characteristic sounds and produced distinct effects. He presented five categories of *forte* and *piano*. The gentlest touching of the keys, the *pianissimo* (*pp*), represented the character of secrecy, mystery, and the pleasing effect of music at a great distance or of an echo.[71] Loveliness, softness, tranquil, equanimity, or sorrow was expressed by the *piano* (*p*). Czerny considered this mode of touch to be soft and tender, while also being somewhat firm and expressive.[72] He considered the *Mezza voce* (*m.v*) to be a quiet speaking tone, such as that found in narration. Brilliant and showy passages, passion, firmness and power could be expressed by the *forte* (*f*). The last expression was the highest degree of force within the limits of what is beautiful: the *fortissimo* (*ff*). Czerny stated "it expresses the exaltation of joy to

[69] Carl Czerny. *Letters to a Young Lady, on the Art of Playing the Pianoforte*. (New York: Da Capo Press, 1982), 11.

[70] Ibid., 11-12.

[71] Czerny. *Complete Theoretical and Practical Piano Forte School*, Volume III. 5.

[72] Ibid.

extacy, of grief to rage; just as it also elevates what is brilliant to absolute splendor and *Bravura*."[73]

Czerny also discussed five degrees of touch and expression: *legatissimo*, *legato*, *mezzo staccato*, *staccato*, and *marcatissimo* or *martellato*. The legatissimo touch was applicable only to arpeggioed chords and only such tones that were consonant or agreeable to the ear. The legato touch "must endeavor to imitate the effect of the human voice, or the smooth tone of a wind instrument."[74] The mezzo staccato was a half-detached touch and would give a certain emphasis to each note. The staccato touch and the pointed detaching the notes "infused new life into the music."[75] The marcatissimo or martellato touch was for the effect of the dazzling bravura playing style.[76] Czerny stressed the importance of those touches in order to execute various shades and degrees of dynamics.

Physical strength, developing finger dexterity, and critical listening were also required for gradations and shades:

> Without exaggeration, we are able to produce at least 100 different degrees of loud and soft in striking any one note; just as a painter can vary any one colour in so many different shades, as gradually to pass from the deepest tints, through infinite gradations, into the finest and almost imperceptible shades, and at last in a manner to melt away and be able lost to view. What a crowd of means as to expression are placed within the reach of the player by the *mere touch alone*! But for all this, is required such great practice, such a degree of command over one's own physical powers, such a perfect mechanical cultivation of the fingers, and lastly so fine an ear, that only an accomplished player can fully avail himself of all these different lights and shades.[77]

[73] Ibid.
[74] Ibid., Volume III, 19-20.
[75] Ibid.
[76] Ibid.
[77] Ibid., 3.

Czerny regarded the beauty of tone as the most important means of agreeable performance:

> The most important means to render such passages agreeable, as appear harsh, overloaded, and dissonant, is beauty of Tone. Whoever possesses the art of always producing from the piano forte a beautiful, harmonious, and smooth tone; who never carries the forte or fortissimo to a disagreeable and excessive harshness; and further who combines the highest degree of volubility with perfect distinctness and clearness, will execute even the most startling assemblage of notes, and give them unfeigned delight.[78]

Czerny categorized six distinct styles of execution throughout the history of piano playing. The first style Czerny discussed was that of Clementi. He wrote, "*Clementi's style*, which was distinguished by a regular position of the hands, firm touch and tone, clear and voluble execution, and correct declamation; and, partly also, by great address and flexibility of finger."[79] Czerny stated that a beautiful cantabile, legato with the use of the pedals, and equality in runs and passages represented Cramer and Dussek's style. Mozart's style was defined as, "A distinct and considerably brilliant manner of playing, calculated rather on the Staccato than on the Legato touch; an intelligent and animated execution. The Pedal seldom used, and never obligato."[80] Czerny discussed Beethoven's style as follows:

> *Beethoven's style*. Characteristic and impassioned energy, altering with all the charms of smooth and connected cantabile, is in its place here. The means of Expression is often carried to excess, particularly in regard to humourous and fanciful levity. The piquant, brilliant and shewy manner is but seldom applicable here; but for this reason, we must the more frequently attend to the total effect, partly by means of a full, harmonious Legato, and partly by a happy use of the Pedals… Great volubility of finger without brilliant pretensions, and in the Adagio, enthusiastic expression and singing melody, replete with sentiment and pathos, are the great requisite in the Player.[81]

[78] Ibid., 72-73.
[79] Ibid., 100.
[80] Ibid.
[81] Ibid.

Hummel, Kalkbrenner, and Moscheles' style represented "the perfect mastery of all mechanical difficulties, delicacy and grace of embellishment and, a correct declamation with refined and elegant taste."[82] Czerny discussed a new style of his time, which was represented by Thalberg, Chopin, and Liszt.

> It is chiefly represented by Thalberg, Chopin, Liszt, and other young artists; and it is distinguished by the invention of new passages and difficulties, and consequently the introduction of new effects; as also by an extremely improved application of all the mechanical means, which the Pianoforte offers in its present greatly improved state, and which, like all former improvements in their days, will give a new impulse to the art of playing on this much cultivated instrument.[83]

Regarding the pedal, Czerny felt that pedals rendered the tone either louder or softer. However, he acknowledged fullness of tone and harmony produced by using the damper pedal and emphasized the importance of its application in pianoforte playing. He wrote, "when the Scale-passages occur only in the right hand, and particularly in the higher octaves, while the left hand has merely an harmonic accompaniment; here this pedal at times produces *a very beautiful effect*."[84] Czerny also acknowledged a difference in tone quality by using the soft pedal. He stated that

> The most beautiful and honorable kind of *piano* will always be that, which is produced by the fingers *alone*, and by light and delicate touch; and it is only in a few passages, very rich in melody, that it is desirable to use this pedal in order to produce *another species of tone*.[85]

Czerny was an influential teacher who emphasized the importance of touch and the development of finger strength for diverse tonal shading. His *Complete Theoretical*

[82] Ibid.
[83] Ibid.
[84] Ibid., 59.
[85] Ibid., 65.

and Practical Pianoforte School was an important and comprehensive didactic work that had a tremendous impact on nineteenth century pedagogy.

2.4 THEODORE KULLAK (1818-1882)

Theodore Kullak, a pupil of Czerny, was a famous pianist and teacher in the nineteenth century. He became a respected pedagogue, and was one of the founders of the Berliner Musikschule, a music conservatory in Berlin. In 1855, Kullak founded the *Neue Akademie der Tonkunst*, which was the largest private institute for musical education in Germany and specialized in the training of pianists.[86] His most famous pupils included Hans Bischoff, Moritz Moszkowski and Philipp Scharwenka.

Kullak devised many exercises for technique development, his work *Die Schule des Oktavenspiels* (*The School of Octave Playing*)[87] being one of his most important studies. The evenness and equality of the hand's up and down strokes were essential elements of Kullak's technique. In the "legato playing" section, Kullak defined the term "touch" as the technical term for "development of tone" on the pianoforte.[88] He also suggested three phases in teaching touch: the preparatory – the up-stroke (lift), the tone producing – the down-stroke and the tone-sustaining – the clinging pressure of the finger on the keys that, corresponded to the note's duration.[89] Kullak addressed the differences between "hammer-touch," or striking-touch and "pressure-touch" and observed that the height of the up-stroke and the touch resulted in different sound qualities:

> The height of the up-stroke is determined by technical and musical requirements. When the finger is perceptibly lifted from the key before the down-stroke, the

[86] Horst Leuchtmann. "Kullak Family," *Grove Music* Online, https://doi.org/10.1093/gmo/9781561592630.article.15656 (accessed January 26, 2017).

[87] Theodore Kullak. *Die Schule des Oktavenspiels*. (Leipzig: Peters, 1848).

[88] Theodore Kullak. *The School of Octave-Playing: A Supplement to the Method of Modern Piano-Playing*. (New York: G. Schirmer, 1898). 3.

[89] Ibid.

> hammer-touch (in the strict sense) results. But if this lift is barely, or not at all, perceptible, we have what is called the "pressure-touch," because the sensation in the hand is rather one of pressure than of striking.[90]

He advocated "pressure-touch" as an important way to achieve legato playing with desirable tone quality:

> Musically considered, the pressured-touch is chiefly important by reason of the greater fullness and roundness of the *cantilena*. For technical reasons it becomes indispensable whenever one finger (e.g., the thumb) alone has to bind successive tones; because the slightest raising of the finger from the key would prevent the legato effect.[91]

Pressure-touch was constantly stressed as a proper means to achieve octave legato playing:

> The same exercises, with the difference, that no break in the smooth legato must occur, the thumb acquiring an unassisted *legato*. It can execute such as a legato by employing only the pressure-touch without any down-stroke proper, and by gliding smoothly from one white key to the next, or from a black key to a white one (*glissando*).[92]

Although Kullak's thoughts and remarks in *The School of Octave Playing* were limited to octave playing, his perspectives on the principles of stroke, touch, and relation to legato playing and tone production remain noteworthy.

2.5 SIGMUND LEBERT (1822-1884) and LUDWIG STARK (1831-1884)

Sigmund Lebert and Ludwig Stark were German pianists, teachers, and editors.[93] They were among the founders of the Stuttgart Conservatory.[94] Lebert and Stark published a piano method, *Theoretical and Practical Piano-School* in1856. The method was approved by pianists, composers, and teachers, including Franz Liszt. Lebert and

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[90] Ibid.
[91] Ibid.
[92] Ibid., 6.
[93] Albert E. Wier. *The Piano: Its History, Makers, Players and Music*. (London: Longmans, Green and Co, 1940), 395.
[94] Ibid., 412.

Stark arranged the method according to degree of difficulty. They recommended that the systematically arranged materials be applied according to the teacher's ability and judgement, as well as the student's individual capacity.[95] The progression of technique, the understanding and perception of the composition, and the history and aesthetics of music was emphasized as the aim of the method.[96] Lebert and Stark write that "by the term correct technique, we mean the right formation of tone, i. e., the ability to elicit from the instrument a beautiful, rich tone, whether forte or piano."[97] They elaborated that all wooden sounds and noise of the mechanism of the instrument should be eliminated to produce a beautiful tone:

> That alone is a beautiful or artistic tone, which shows no trace of its production and origin, which has entirely stripped off its material character and reaches our ear as if it were something spiritual, ideal. As the artistic tone of the singer and performer on wood-instruments must be free from all noise which the air may make in its passage or emission, so that of the pianist must be free from all wooden sounds, from all noise of the mechanism of the instrument.[98]

Lebert and Stark advocated rapid fall of the finger to develop independence and to enhance sound quality. They stated, "the tone formatted by the most rapid fall of the finger possible, and without the least pressure. The strength will develop of itself with the gradual development of the independence and elasticity of the finger-joints."[99]

Regarding touch, they believed that correct touch produced artistic tone and depended on the degree of variable dynamic levels.[100] Lebert and Stark elaborated that the various kinds of touch and degrees of power on the piano produced distinct and

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[95] Lebert, Sigmund, and Ludwig Stark. *Theoretical and Practical Piano-School: For Systematic Instruction in All Branches of Piano-Playing from the First Elements to the Highest Proficiency*. (New York: G. Schirmer, 1900), xii.

[96] Ibid., xviii.

[97] Ibid., xiv.

[98] Ibid.

[99] Ibid., 1.

[100] Ibid., xv.

different characteristic sounds.[101] The correct touch depended on correct arm, wrist and finger position:

> The arm must hang down from the shoulder in a loose and easy manner, the elbow must not be turned outward, but must point downward in such a manner that there is a distance of about one inch between the arm and the body. The piano stool must be placed so that the elbow, wrist and hand form, as nearly as possible, a straight line with the hand; because, if it is held higher, we are apt to play with it, while, on the contrary, it should always be perfectly quiet. If the arm be held too low, the hand has not full control of its power. …it [hand] must be on a level with the white keys and so far from the piano that the wrist can rest upon it. By this we best fulfill the first requirement for legato-playing, i. e.., a quiet position of the arm. All this refers to the arm and not to the hand and wrist. If the moves from the middle of the keyboard in either direction, the forearm only must move with it, while the elbow and upper arm should remain as near to the body as possible."[102]

Lebert and Stark considered good legato playing to be a foundational aspect of good playing, but good legato playing could not be achieved without the correct touch and tone. They stated that "The correct touch or the formation of tone is the basis of all technique. Without this preliminary condition that beautiful legato, which we have already pointed out as the foundation of good-playing, can never be obtained."[103]

Sigmund Lebert and Ludwig Stark's method book greatly emphasized touch and finger development with a fixed elbow and upper arm position. However, the book also included, instruction of tonal beauty, the formation of tone and aesthetic study. Lebert and Stark's piano method was considered a valuable resource in the nineteenth century.

2.6 ADOLPH KULLAK (1823-1862)

Adolph Kullak was a pupil of Adolph Marx and a piano professor at the *Neue Akademie* which was founded by his brother, Theodore Kullak. He wrote three

[101] Ibid.
[102] Ibid., xxiv.
[103] Ibid., xxiii.

comprehensive books in the mid-nineteenth century: *The Art of Touch* (1855), *The Musically Beautiful* (1858), and *The Aesthetics of Piano Playing* (1861). In his treatise *The Art of Touch*, which was dedicated to Liszt, Kullak acknowledged the use of arm weight for expressive intensity and its influence on tone production. He wrote, "the lifting of the fingers is done with the help of the hand, and when more intense expression is required then even the help of the whole arm is brought into play."[104] Kullak further developed his thoughts in *Die Ästhetik des Klavierspiels* (*The Aesthetics of Piano Playing)*, which was first published in 1861. The second and third editions were revised by Hans Bischoff with the approval of his teacher, Theodore Kullak. The book comprised two parts: the first part included "The History of Clavier Virtuosity" and "Critical and Historical Review of Pianoforte Methods, and of Writings on Pianoforte-playing," and the second part included "The presentation of the Beautiful in Pianoforte playing in particular." The second part was devoted to piano technique and interpretation, including touch for tone and colors. *The Aesthetics of Piano Playing* concentrated on a thorough explanation of physical mechanics including finger strokes, quiet hand, wrist-stroke, and movements from the elbow-joint and shoulder-joint. Kullak expressed his thoughts on the connection of technique and mechanical training:

> Some theoreticians distinguish technique from mechanical training. To the latter they would leave the examination of the laws of finger-action, and of the movements of all members and joints needed in playing, and trace the same abstractly, without regard to their bearing on compositions, merely with reference to the given physico-mechanical purpose, to definite forms. Technique would then have to consider this mechanism as serving the ends of connected composition. …A sharp demarcation of these two conceptions is not necessary, and is also hard to carry out. Where does mere mechanics cease, and technique commence? They are intimately connected; their separation would make it incumbent upon

[104] Maria Levinskaya. *The Levinskaya System of Pianoforte Technique and Tone-Colour through Mental and Muscular Control*. (London: J.M. Dent and Sons, 1930), 32-33.

> mechanics to abstain from all practical examples, for the very least connection of tones is an atomic germ of composition.[105]

Mechanical training was considered the primary and indispensable condition of pianoforte playing.[106] Kullak wrote that tone production could be achieved in relation to the physical playing mechanism and the features of the composition:

> The development of the hand is the course of that process… concentrated in velocity and strength to serve a single purpose. This purpose aims at thoroughly training, first the hand, but thereafter the playing mechanism entire, even with the muscles of the upper arm, to handle the mechanism given in the pianoforte keyboard in such manner, that the production of tone can be achieved in all those relations, wherein they are demanded by the spirit living in compositions created for the pianoforte. [107]

He emphasized relaxation of the entire playing mechanism:

> … the physical activity of the player must concentrate itself practically and economically at the point from which the strength is exerted. This is the movement in the knuckle-joint and the pressure of the finger-tip. – Any other tension in the forearm, in the wrist, in the fingers not directly employed, is an aimless waste of strength leading to a roundabout and more difficult attainment of the goal. There must therefore be a complete relaxation of the entire playing apparatus from the upper arm down to the finger-tip, or, as Marpurg expresses it, the relaxation of all nerves must be the general fundamental feeling to be most emphatically awakened in every player.[108]

Regarding touch for tone and color, Kullak stated "From the varieties of touch many different charms of tone arise."[109] He acknowledged that various hand and finger positions were required to produce a touch that resulted in beautiful quality of tone. He stressed the role of touch quality in the production of desirable tone quality:

> The theory of the position of the hand is a difficult point, not quite clearly defined even at present, as opinions conflict concerning it. … not the position of the hand, but the quality of touch and the tone-production, must above all be kept in view. The latter is the substance, the former only the form. The tone produced by touch must possess a well-defined quality, and from various individuality of the hands

[105] A. Kullak. *The Aesthetics of Pianoforte-Playing*. (New York: Da Capo Press, 1972), 99.
[106] Ibid.
[107] Ibid., 97.
[108] Ibid., 103-104.
[109] Ibid., 294.

> deviations in position will result. The requirement of one particular posture of hand and fingers as a standard must be termed either one-sidedness, or prepossession for theory without due consideration of practical needs.[110]

He enumerated two characteristics of finger touches: the fall of the finger and the act of pressing downward:

> This production of tone by touch, as the higher and sole ruling factor, must possess the following properties. Like the hammer-action, the finger-stroke must be perfectly loose, appearing to the eye much as is the finger were merely attached to the hand at the knuckle-joint by the supplest, softest, and most yielding fastening. … The movement of the finger toward the key must exactly resemble a fall… This fall of the finger is one chief characteristic.
> The second lies in the catching or pressing down of the key. – That is, after its fall the finger-tip must press upon its spot on the key so clingingly, firmly, yet gently with all firmness, that is appears to adhere to the key as if by suction, without slipping backwards or forwards. The finger must cling so closely, that its tip wears the appearance of a soft, semi-fluid, readily knead-able mass, which seems to lie quite stably wherever it lights. The touch thus exhibits two diametrically opposed manifestations: (1) A lightening-like vivacity of lift and fall; (2) utter repose and passivity during the act of pressing down.[111]

Kullak stressed the importance of developing relaxed finger movements and volume of tone. He stated that

> The movement of the finger must be neither strained nor too lax; it should appear natural as a native energy. In its movement the finger should develop only free, unfettered individuality, and the tone should develop accordingly a proportionate volume.[112]

Kullak also believed that shades of tone quality were modified by tone quantity:

> Tone-production on the pianoforte depends, on the one hand, upon the specific nature of the hammer-action; and the characteristics of the latter, provided that it is normally perfect, consist: (1) In the absolute responsiveness of the striking action directed against the strings; (2) in the shading and modification of the degree of power and rapidity proper to that striking action, and most intimately connected with its responsiveness; (3) in the equalization of each single member of the total mechanism, so accurately adjusted, that like exertion of strength gives

[110] Ibid., 101.
[111] Ibid., 101-102.
[112] Ibid., 102.

> like quality and quantity of tone, the shade of the latter following the modifications of the former.[113]

He also addressed the importance of mastering scale playing as a fundamental means of developing a pearling touch:

> In the mastery of scale-playing an important step has been made. Musically and technically it forms an addition, which essentially widens the player's horizon. On the basis of the scale greater freedom and independence in the feeling of the hand are developed, and the fingers more familiarized with the extent of the keyboard. The pearling touch, the inmost and truest essence of the beautiful on the pianoforte, reaches full development in the scale. The spring-power of the falling finger, the quietness of the hand, precision in lifting the fingers, and the easy, natural pose of the whole mechanical apparatus, are promoted and fortified by scale-playing.[114]

Throughout the entire treatise, Kullak emphasized physical and mechanical training, various touches and their relation to tone-production. Although Kullak stressed mechanical training and technique, the aim was to produce quality of tone and beautiful expression.[115] He stated, "Technique is not the sole desideratum, but only the first step; the spiritual tone-color is the higher, the more distant goal, often unattainable to many a virtuoso."[116]

Kullak's treatises are less well-known partly due to the fact that Kullak lived a short life of thirty-nine years and, thus, had few pupils to inherit his teaching philosophy. His treatises, aesthetic views on piano playing, and contributions to piano pedagogy deserve appreciation.

[113] Ibid., 97-98.
[114] Ibid., 143.
[115] Ibid., 211.
[116] Ibid., 296-297.

2.7 LUDWIG DEPPE (1828-1890)

Ludwig Deppe was a German piano teacher, conductor and composer who studied with Adolf Marx in Hamburg.[117] He founded a musical society in Hamburg and served as Kapellmeister of the Royal Opera in Berlin from 1886 to 1888.[118] As a piano pedagogue, Deppe advocated playing with weight and the free fall of the finger. The article *Armleiden der Klavierspieler* ("Arm Ailments of the Pianists")[119], written by Deppe in 1885, revealed some of his ideas. However, Deppe's pedagogical ideas were primarily known through the observations and writings of his pupils: Amy Fay's *Music-Study in Germany* (1886),[120] Elizabeth Caland's *Artistic Piano-Playing* (1903)[121] and C. A. Ehrenfechter's *Technical Study in the Art of Pianoforte Playing* (1891).[122] According to Fay, Deppe observed and analyzed the most famous pianists of his day.[123] He observed that unlike the free and graceful arm movements of violin players, pianists were "inhibited by being made to sit with quiet hands, wrists and arms, while fingers did all the work."[124] Relevant principles of violin playing were applied to piano technique in his teaching.[125] Deppe was concerned with physical movement at the piano and these movements' relationship to beauty of tone. Caland stated:

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[117] Reginald R. Gerig. *Famous Pianists & Their Technique*. (Bloomington: Indiana University Press, 2007), 251.

[118] John Warrack. "Deppe, Ludwig," *Grove Music* Online, https://doi-org.pallas2.tcl.sc.edu/10.1093/gmo/9781561592630.article.07583 (accessed January 26, 2017).

[119] Gerig. *Famous Pianists,* 252.

[120] Amy Fay. *Music-Study in Germany*. New York: Da Capo Press, 1979.

[121] Elisabeth Caland. *Artistic Piano Playing as Taught by Ludwig Deppe*. Authorized translation of 1893 German edition by Evelyn Sutherland Stevenson. (Nashville, Tenn.: The Olympian Publishing Co., 1903).

[122] C. A. Ehrenfechter. *Technical Study in the Art of Pianoforte Playing (Deppe's Principles)*. (London: William Reeves, 1891).

[123] Fay. *Music Study in Germany*, 301.

[124] Roger Crager Boardman. "A History of Theories of Teaching Piano Techinc." PhD diss., (New York University, 1954), 97.

[125] Gerig. *Famous Pianists & Their Technique,* 251.

> The fusion of these two things-i.e., beauty of movement and beauty of tone-was to him a law of primary importance in the art of music. In other words, he claimed that all movements on the keyboard could be shaped in such wise that beauty of tone would be the natural consequence of beauty of movement. For it, in the acts of ordinary life, a graceful movement produces a pleasing result, with how much greater force and significance will this law apply to piano playing-a manifestation of art which justly holds so high and aesthetic a place!"[126]

Deppe wrote that the elbows should rest slightly below the keys, lower than the wrist and hand, and that the pianist should sit in a low chair to achieve a free condition in the hand:

> In my opinion the principal reason for the frequently occurring arm strain in pianists is the seat at the instrument being too high. The pianist should sit so that the forearm from the elbow to the wrist will be slightly raised-in this way the hand will remain free from any oppressive influence of the elbow and the horizontal scale movements can be easily accomplished. In response to this statement, most pianists will immediately raise the question: "How then, when one is sitting low, can fullness of the tone be brought out. One cannot properly strike the keys in this manner." But this is precisely the point where my teaching method begins. Primarily it was the desire for artistic results that led me to this conclusion.[127]

Caland elaborated further:

> The elbow should be as close to the body as is possible without undue compulsion, and the line *formed by the fifth finger, the outside of the hand, and the forearm should be a straight one* - that is to say, the forearm should form a right angle with the keyboard.[128]

Deppe also believed a poetic tone color was produced by sitting low. As Fay noted, "Deppe enjoins sitting very low - that is - not higher than common chair. He says one may have "the soul of an angel," and yet if you sit high, the tone will not sound poetic."[129] Deppe objected to extreme lifting of the fingers and isolated finger technique because they hindered the production of the singing quality of tone:

> Deppe objects to this extreme lifting of the fingers. He says it makes a knick in the muscle, and you get all the strength simply from the finger, whereas, when

[126] Caland. *Artistic Piano Playing*, 19.
[127] Gerig. *Famous Pianists*, 252-253.
[128] Caland. *Artistic Piano Playing*, 26.
[129] Fay. *Music Study in Germany*, 293.

> you lift the finger moderately high, the muscle from the whole arm comes to bear upon it. The tone, too, is entirely different. Lifting the finger so very high, and striking with force, stiffens the wrist, and produces a slight jar in the hand which cuts off the singing quality of the tone, like closing the mouth suddenly in singing. It produces the effect of a blow upon the key, and the tone is more a sharp, quick tone; whereas, by letting the finger just fall - it is fuller, less loud, but more penetrating.[130]

In his article, *Arm Ailments of the Pianist*, Deppe emphasized that tone was created by coordinated action of all parts of the arm movement rather than hand or finger movement alone.[131] He asserted that the fingers should fall on, rather than strike the keys. He further elaborated in an article:

> My tone production does not develop through striking, but solely through the weight of the hand, through simple movements of lifting and falling, with quiet, relaxed fingers. The tone produced in this manner is not only more refined, but also more intense in character, resulting in a more penetrating sound than the one which is struck. The former tone does not come about through more or less forced, neve - irritating muscle action; it forms itself much more in complete repose, without any inner or outer excitement - so to speak - "with conscious unconsciousness."[132]

However, his idea of "free-fall" caused some misunderstanding. Caland clarified Deppe's expression:

> …Deppe spoke of allowing the fingers to fall on the keys, with intellectualized finger tips - the "conscious production of tone;" and again, to denote the simple movements, he used the phrase, "free and controlled fall of the arm." Now, it stands to reason that his favorite expression, "free fall," must be taken in a metaphorical, rather than literal, sense, for certainly a 'controlled" fall cannot strictly be designated "free."[133]

[130] Ibid., 287-288.
[131] Gerig. *Famous Pianists,* 254.
[132] Ibid., 253.
[133] Caland. *Artistic Piano Playing*, 59.

The tone produced by this touch will "at first be very weak, almost inaudible, but with practice it will gain everyday in power, sonority, and brilliancy."[134] Caland also elucidated:

> The tone - so small in the beginning - will be found to increase in volume daily, in proportion as the pupil acquires equal domination over the different joints and muscles, and learns to employ his fingers in conscious and reflective fashion. Meanwhile there will go on, coincidently, a gradual enlightenment of the understanding, and a deepening of that power of perception, of intelligent insight which is so essential to the artistic interpretation of a composition. Deppe was wont to liken this interdependent development of tone power and of musical understanding to the process of growth in a seed planted in the soil.[135]

Ear-training was an important aspect of Deppe's instruction, and he made efforts to "awaken a keen sense of tonal beauty in the minds" in his students.[136] Deppe made Fay listen to every tone, and refused to allow her to play without listening carefully. As she noted, "One of his grand hobbies is *tone*, and he never lets me play a note without listening to it in the closest manner, and making it sound what he calls "*bewüsst* (conscious)".[137] Fay believed that this concentrated practice was more effective than mechanical practice, because it developed aesthetics and tonal beauty and made the music more exciting.[138] She stated further, "By practicing in his method the tone has an entirely different sound, being round, soft and yet penetrating, while the execution of passages is infinitely facilitated and perfected."[139]

Regarding the pedal, Fay expressed how Deppe managed the pedal and produced "a very ideal sound."[140] She quoted Deppe as saying "The Pedal is the *lungs* of the

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[134] Fay. *Music Study in Germany*, 288.
[135] Caland. *Artistic Piano Playing*, 24.
[136] Kochevitsky. *The Art of Piano Playing*, 8-9.
[137] Fay. *Music Study in Germany*, 293.
[138] Ibid., 295.
[139] Ibid., 316.
[140] Ibid., 298.

piano."[141] Caland also attested to Deppe's mastery of pedaling by saying, "Deppe's teachings concerning the use of the pedal; in this artistic subject, as in all other branches of his art, he shows himself both *savant* and master."[142] According to Caland, Deppe allowed the use of the soft pedal "only when expressly indicated by the composer" and compared its sound to a "buzzing." Caland stated further, "The player should have in his own control the power of producing any desired nuance of tone, and then there will be no need to have resource to an extraneous aid of such doubtful value."[143]

Ludwig Deppe was one the foremost nineteenth century piano pedagogues. His teaching principles included sitting low, avoiding lifting the fingers high, critical listening and pedaling for the cultivation of a soft, even, penetrating tone. Deppe's concepts of tone production through weight of the arm were significant and influenced the history of piano pedagogy.

2.8 WILLIAM MASON (1829-1908)

William Mason was a composer, pianist, and pedagogue in the United States. His early education was with his father Lowell Mason and with Henry Schmidt.[144] In 1849, he moved to Europe and studied with prominent teachers, including Moscheles, Hauptmann and Richter in Leipzig, Dreyschock in Prague and Liszt in Weimar.[145] Mason's *Memories of a Musical Life*[146] was considered a valuable account of his early

[141] Ibid., 297.
[142] Caland. *Artistic Piano Playing*, 61.
[143] Ibid., 64.
[144] William E. Boswell. "Mason Family," *Grove Music* Online, https://doi-org.pallas2.tcl.sc.edu/10.1093/gmo/9781561592630.article.17984 (accessed January 26, 2017).
[145] Ibid.
[146] William Mason. *Memories of a Musical Life*. (New York: Century Co, 1901).

piano playing education with his many noteworthy teachers. He described his pianoforte lesson with Mr. Henry Schmidt as follows:

> Mr. Schmidt taught me much concerning the production of tone in pianoforte playing, and in particular led me to acquire a certain habit of touch which I have never lost, and which has been the means of greatly lessening the fatigue which would otherwise have been attendant on the performance of pieces which require much strength and long-continued endurance.[147]

Mason also described his study with the pianoforte virtuoso Leopold De Meyer from 1847 to 1848:

> It was from a careful study of the manner of his playing that I first acquired the habit of fully devitalized upper-arm muscles in pianoforte-playing. The loveliness and charming musical beauty of his tones, the product of these conditions, greatly excited my admiration and fascinated me. I never missed an opportunity of hearing him play, and closely watched his movements, and particularly the motions of hand, arm, and shoulder. I was incessantly at the pianoforte trying to produce the same delightful tone quality by imitating his manner and style. My continued perseverance was rewarded with success, for the result was a habit of devitalized muscular action in such degree that I could practically play all day without a feeling of fatigue. The constant alternation between devitalization and reconstruction keeps the muscles always fresh for their work and enables the player to rest while playing. The force is so distributed that each and every muscle has ample opportunity to rest while yet in a state of activity. Furthermore the tones resulting from this touch are sonorous and full of energy and life.[148]

Mason began to study with Liszt in 1853. Mason was impressed by Liszt's teaching approach and applied it to his own teaching and method:

> I found at this first lesson that he was very fond of strong accents in order to mark off periods and phrases, and he talked so much about strong accentuation that one might have supposed that he would abuse it, but he never did. When he wrote to me later about my own piano method, he expressed the strongest approval of the exercises on accentuation.[149]

[147] Ibid., 15-16.
[148] Ibid., 19-20.
[149] Ibid., 98-99.

In his teaching, Mason emphasized the accentual treatment of technical practice.[150] He expanded on his teaching concepts and published an important pedagogical work, *Touch and Technic: By Means of a New Combination of Exercise-Forms and Method of Practice Conducting Rapidly to Equality of Finger Power, Facility and Expressive Quality of Tone*, op. 44, in 1889.[151] It comprised four volumes, with each volume consisting of different exercises. The first volume included three sections of two-finger exercises. Mason regarded two-finger exercises as one of the oldest known devices for strengthening and individualizing the fingers,[152] and stated, "of all exercises of which I have knowledge, for stimulating, strengthening, and limbering the fingers, this simple little exercise is the most effective."[153] He credited Liszt with the original idea for the two-finger drill. Moving upward and downward in either a diatonic or chromatic scales, in two note phrase groups and using adjacent fingertips was the basic form of technical practice.[154] In the introduction of volume I, Mason stated that "through the application of different kinds of touch to its various forms, it (the two-finger exercise) becomes comprehensive and exhaustive in its results."[155]

Mason believed that tone quality was the most fundamental aspect of piano playing and could be achieved by different gradations and methods of touch. Phrasing and expressivity could also be achieved through tone quality and touch quality. He considered tune, time, quality of tone, expression or phrasing, facility of execution and

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[150] Gerig. 238-239.
[151] William Mason. *Touch and Technic: For Artistic Piano Playing, Op. 44*. Vols. I-IV. (Philadelphia: Theodore Presser, 1897).
[152] Mason. *Touch and Technic*, 4.
[153] Ibid.
[154] Gerig. 239-240.
[155] Mason. *Touch and Technic*, 5.

repose as the component elements of piano-playing. Mason emphasized the importance of strength and elasticity of touch in piano playing:

> The elements of strength and elasticity are both essential to a good pianoforte touch, and in accordance with their presence in varied degree and combination will be tone-color, or quality of tone produced. The application of mere force without elasticity produces a hard, piercing, and unsympathetic tone. On the other hand, an undue exercise of elasticity results in a characterless tone. The combination of the two principles in right proportion accomplishes the desired result.[156]

Mason wrote that supple, flexible muscles were indispensable in the production of a resonant tone quality:

> Elasticity of touch is gained through the proper use of the flexor and extensor muscles, extending from fingertip to elbow, acting in harmonious union with various muscles of the upper arm, of which the *triceps* is the great extensor of the elbow-joint, while the *biceps* and *brachialis anticus* are the antagonistic flexors. Of these the triceps, which lies upon the outer part of the upper arm, affords practically the key to the whole situation, and careful attention to its proper action in playing will in a short time bring about results which can be attained in no other way. This is due to its important influence in the development of a generally relaxed muscular condition and to its powerfully effective agency through these means in the production of a musical and resonant quality of tone, which is, at the same time, pervasive and singing in character and of great carrying power. Supple and flexible muscles are indispensable in the production of a musical and sympathetic tone. On the other hand, a hard and heartless tone is the natural result of stiff and rigid muscles.[157]

Mason defined touch as "the art of eliciting tone from the pianoforte."[158] He wrote that

> Touches may be classified according to the tone qualities and effects they produce, as legato, staccato, demi-staccato, portamento, etc.; or according to the particular part of the muscular apparatuses most active in eliciting the tone, as arm touch, hand touch, finger touch, etc.[159]

[156] Ibid.
[157] Ibid., 5.
[158] Ibid.
[159] Ibid.

Mason stated that the *finger* appeared more active than any other part of the playing apparatus and produced the tone[160] and emphasized that the finger must *fall* upon the key rather than strike it.[161] Mason warned against hardness and inflexibility:

> At the moment of contact, which does not mean *collision*, the finger settles upon the key with a determined and resolute pressure, which is, however, tempered by an immediate relaxation or yielding of the muscles throughout the arm… the key is then held firmly, but without stiffness or inflexibility.[162]

He believed that a high-raised finger would result to a bad sound quality:

> If the touch of high-raised finger is used exclusively or unduly it leads to bad results and establishes modes of finger motion which are in direct conflict with the principles upon which rapid passage playing is based. … A confirmed habit of lifting the fingers high precludes the possibility of swift and facile passage playing, for there is no time for superfluous motion in a degree of rapidity which is hardly exceeded by the quickness of thought. Besides this the tone produced by the blow from high raised finger is not purely musical, as it must be vitiated in some degree by the thud which is a result of the blow.[163]

Appropriate finger technique was fundamental, and its flexibility and coordinated use with the entire playing mechanism would lead to different touches and strengths:

> In order to produce a good effect with these passages, which consist of scales, arpeggios, broken chords, or indeed of any series of tones following in rapid succession, it is necessary that the fingers should rise but a short distance above the keys, and the player must be able to produce full tone of adequate and varying power without using the straight up and down hammer-like stroke. This requires attention in rudimentary stages just as much as does any other principle, and its accomplishment will be much facilitated through the agency of another kind of touch, in which not only the metacarpal, but also the first and second finger joints are equally concerned, and the entire mechanism is kept in an extreme state of elasticity and flexibility, with nevertheless sufficient contractile power for reserve strength and to serve as a base and support.[164]

[160] Ibid., 8.
[161] Ibid., 5.
[162] Ibid.
[163] Ibid.
[164] Ibid.

Mason outlined a variety of touches: the clinging legato and the finger elastic, the arm touches, the hand touches, the stab touch, exaggerated form of elastic touch, and push and pull as elements in touch.[165] Among those finger touches, the clinging legato was one of the most important touches, as it was frequently employed in cantabile passages and melody playing.[166] Mason stated that a full, sonorous melodic tone would be produced by using the clinging legato touch.[167] He stressed that the correct way of applying the clinging legato resulted in "a tone which is full, warm, and pervasive."[168] He explained further:

> The finger falls upon the key with decision, but free from rigidity – settles firmly down upon it with a sense of having come to stay. … In this way the tones are bound together, and as it were, melt into each other, as expressed by the word *legato*, signifying to bind. Each key must be held with moderate pressure and without rigidity throughout the full time-value of the tones as indicated by the notes, but not one instant longer.[169]

The *elastic touch* was another fundamental form of touch Mason suggested. In this touch, "the finger strikes and sweeps the key while in the action of flexion, or in pulling toward and closing up to the hand."[170] Mason described the sound quality produced by the *elastic touch* as follows: "The tone produced by this touch has a buoyancy, lightness, and flexibility which is enlivening and exhilarating. The tones float and rebound, as it were, and are not dull, colorless, or monotonous."[171] Mason believed that, by practicing the *elastic touch*, the muscles controlling the finger joints would be strengthened and the

[165] Ibid., 4.
[166] Ibid., 8.
[167] Ibid., 10.
[168] Ibid., 8
[169] Ibid.
[170] Ibid., 9.
[171] Ibid., 10.

muscles of the wrist and forearm would be loosened.[172] A pearly touch, or the mild staccato touch, was a modified form of the *elastic touch*:[173]

> The most important and useful of these is effected by a slight and almost imperceptible flexion of the finger-tips at the moment of contact with the key. This sliding or caressing touch is exceedingly effective in the performance of very rapid passages, the tones resulting therefrom being so uniformly and distinctly clear and musical as to suggest the simile of a "string of pearls." This has given rise to the expression, a "pearly touch." In the performance of very rapid scale and arpeggio passages, and also as used in the velocity from, the degree of finger flexion is so slight as to be hardly perceptible to the eye.[174]

Mason addressed the importance of scapular muscles and their role in the production of tone quality, writing that flexibility of movement in shoulder muscles created a full and sonorous tone quality.[175] Mason stated that the true functions of the arm included three conditions: down-arm, up-arm, and relaxed or devitalized arm.[176] Mason defined the relaxed arm as a condition of perfect suppleness throughout the arm, hand, and fingers without any constriction.[177] Mason discussed the hand touches but stressed the importance of arm participation:

> In the free-hand touch the hand moves upon the wrist with extreme pliancy, the finger delivering the force to the keys. Contrary to the usual teaching of elementary books of technic, the impulse which comes to expression through the hand motion has its origin further back in the arm, and can never be correctly or effectively expressed by a motion entirely localized in the hand.[178]

William Mason was an important American piano pedagogue, and his *Touch and Technic* provided a thorough investigation of various forms of touch and their

[172] Ibid.
[173] Ibid., 11.
[174] Ibid.
[175] Ibid., 14.
[176] Ibid., 15.
[177] Ibid.
[178] Ibid., 16.

relationships to tone production. Mason's emphasis on the various touches in tone production, relaxation and entire arm participation was noteworthy.

2.9 THEODORE LESCHETIZKY (1830-1915)

A Polish pianist, teacher and composer. Theodore Leschetizky studied piano with Carl Czerny in Vienna before moving to St. Petersburg in 1852. Leschetizky became director of piano studies at the St. Petersburg Conservatory in 1862, where preeminent pianist Arthur Rubinstein was the director.[179] His student Arthur Schnabel estimated that during his career Leschetizky taught nearly 1,800 students.[180] Major figures who were his pupils included Ossip Gabrilovich, Ignaz Friedman, Benno Moiseiwitsch, Alexander Brailowsky, Fannie Bloomfield-Zeisler and Katherine Goodson. Many other students, including Vasily Safonov, Isabelle Vengerova, Anna Esipova and Anna Langenhan-Hirzel became well-known teachers.[181] His most well-known student, Ignaz Paderewski, achieved worldwide success and established Leschetizky as one of the widely renowned piano pedagogues of his day.[182] In his early life, the Bohemian pianist Julius Schulhoff was Leschetizky's greatest influence.[183] Leschetizky was impressed with Schulhoff's playing, particularly his sound quality and touch, and he described Schulhoff's playing as a new style of performance:

> Under his hands the piano seemed like another instrument. ... I began to foresee a new style of playing. That melody standing out in bold relief, that wonderful sonority - all this must be due to a new and entirely different touch. …Schulhoff's

[179] Donna Ruth Bashaw. "The Evolution of Philosophies and Techniques of Piano Pedagogy from 1750 to 1900 Traced Through the Teachings of C. P. E. Bach, Clementi, Czerny, Chopin, and Leschetizky." (Master's thesis, California State University, Fullerton, 1980).

[180] Artur Schnabel. *My Life and Music*. (New York: Dover Publications, 1988), 124.

[181] James Methuen-Campbell. "Leschetizky, Theodor," *Grove Music* Online, https://doi.org/10.1093/gmo/9781561592630.article.16474 (accessed January 26, 2017).

[182] Ibid.

[183] Renee Christine Hendricks. "An Examination of the Teaching Methods of Seven Nineteenth-Century Piano Pedagogues." (Master's thesis, American University, 1988), 41.

> playing was a revelation to me. From that day I tried to find that touch. I thought of it constantly, and studied the five fingers diligently to learn the method of production. I practiced incessantly, sometimes even on the table-top, striving to attain firm finger-tips and a light wrist, which I felt to be the means to my end. I kept that beautiful sound well in my mind, and it made the driest work interesting.[184]

Schulhoff's playing influenced Leschetizky's development of an entirely different kind of touch, which resulted in the beautiful singing tone that became the foundation of the so-called "Leschetizky School."[185] Annette Hullah described the impact of his experiences:

> The change in him was to be of farther reaching influence than he dreamt of at the time, for it filtered through him to his pupils and created in them the germ of what developed later into the famous Leschetizky School. Schulhoff's visit marked an epoch in Leschetizky's life.[186]

Leschetizky did not believe in one method and was against fixed principles. In a letter dated June 6, 1915 to Carl Stasny of the New England Conservatory of Music, Leschetizky wrote, "I am personally against any fixed principle in instruction. Every pupil must, in my opinion, be treated differently according to circumstances."[187] Annette Hullah further recounted Leschetizky's thoughts:

> I have no technical method, there are certain ways of producing certain effects, and I have found those which succeed best; but I have no iron rules. How it is possible one should have them? One pupil needs this, another that; the hand of each differs; the brain of each differs. There can be no rule.[188]

Ethel Newcomb, one of his students who later became his assistant, related his opinion:

> …it is far better to leave your mind a blank for the pupil to fill in. You will discover more easily, in this way, what he needs. Even in technique it is impossible to have a method, for every hand is different. …Go to concerts and be sharp-witted, and if you are observing you will learn tremendously from the ways that are successful and also from those that are not. Adopt with your pupils the

[184] Gerig. *Famous Pianists & Their Technique*, 271.
[185] Hendricks. "An Examination of the Teaching Methods," 42.
[186] Annette Hullah. *Theodor Leschetizky*. (London: J. Lane, 1906), 6.
[187] William Leslie Sumner. *The Pianoforte*. (New York: St. Martin's Press, 1971), 186.
[188] Hullah. *Theodor Leschetizky*, 41.

> ways that succeed with them, and get away as far as possible from the idea of a method.[189]

Leschetizky did not have a fixed principle of instruction, but he stressed the importance of tone in his teaching: "*C'est le ton qui fait la musique*" ("it is the tone which makes music.")[190] He worked on developing each of his students' ability to produce a beautiful tone. His students commented on the fact that Leschetizky worked with touch and tone.[191] He often associated the piano's tone quality to that of a good singer; "he learned to play melodies beautifully by listening to keyboard melodic lines as if they were vocal lines."[192] According to Ignaz Paderewski, Leschetizky focused his teaching on the production of a beautiful tone quality:

> The method of Leschetizky is very simple. His pupils learn to evoke a fine tone from the instrument and to make music not noise. There are principles that are uniformly inculcated in every pupil – that is, breadth, softness of touch and precision in rhythm. For the rest, every individual is treated according to the nature of his talent. In one word it is the method of methods.[193]

Leschetizky stressed accurately listening to oneself in order to produce a good tone quality. He noted, "One could more easily imagine the beauties of music than one could reveal them in actual playing. …Listening to the inward singing of a phrase is of far more value than playing it a dozen times."[194] Leschetizky also mentioned that beautiful tone quality was not dependent on the quality of the instrument, but on the pianist's ability to produce a beautiful tone quality through touch:

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[189] Ethel Newcomb. *Leschetizky As I Knew Him. With a New Introd. by Edwine Behre*. (New York: Da Capo Press, 1967), 107.

[190] Arthur Elson Brée, and Seymour Bernstein. *The Leschetizky Method: A Guide to Fine and Correct Piano Playing*. (Mineola, N.Y.: Dover, 1997), 26.

[191] Sheryl Maureen Peterson Mueller. "Concepts of Nineteenth-Century Piano Pedagogy in the United States." (PhD diss., University of Colorado at Boulder, 1995), 53.

[192] Pamela Jo Prater. "A Comparison of the Techniques of Piano Playing Advocated by Selected Twentieth Century Pedagogues." (PhD diss., The University of Texas at Austin, 1990), 77.

[193] Sumner. *The Pianoforte*, 186-187.

[194] Newcomb. *Leschetizky As I Knew Him*, 18-19.

> If you really know how to produce a certain effect-and produce it as the result of your knowledge - not of your piano - you can face almost any instrument with a clear conscience. If you leave anything to chance, you will be the first to feel it-your audience will be the second. A good pianist should be able to make any passable instrument sound well, for his knowledge will be so accurate that he can calculate to a very fine point how much he must allow for the difference and quality of touch."[195]

Several of Leschetizky's students wrote method books based on Leschetizky's principles. Among these books, only one received a personal endorsement from Leschetizky: *The Groundwork of the Leschetizky Method*, written by his assistants, Malwine Brée, in 1902.[196] The book was dedicated to Leschetizky and included authentic pictures of Leschetizky's hands.[197] Brée addressed the use of fingertips as it related to tone quality, writing that it was important for the pianist to produce a full tone quality by striking the keys with accuracy.[198] She also stated that the elastic finger-tip produced a richer tone.[199] In soft passages, Bree advocated a flexible wrist in combination with firm fingertips for the increase in sound quality sensitivity.[200] She believed that the shape of the fingers affected sound quality. She elaborated further:

> The fingers must not change their shape when raised from the keys, but must remain curved. The raised finger must not be inward or straightened out stiffly. These changes would not merely look bad, but would cause a decided waste of effort at the expense of speed and tone quality.[201]

She affirmed that even finger exercises should be played with a beautiful tone quality that mimicked the quality of singing. She stressed obtaining an excellence in touch, obtaining

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[195] Hullah. *Theodor Leschetizky*, 36-37.
[196] Malwine Brée, *Die Grundlage der Methode Leschetizky*. (Mainz: Schott, 1902).
[197] Brée. *The Leschetizky Method*, 4.
[198] Ibid., 7.
[199] Ibid., 5.
[200] Ibid., 48.
[201] Ibid., 7.

a warm fullness of tone and mastering many different styles of tone.[202] Brée included a condensed description of how to produce cantilena and a singing quality of tone:

> When a strong, full tone is to be emphasized in a *cantilena*, the finger alone has not sufficient strength, and must be aided by wrist pressure in the following way. The key-surface is touched lightly and the finger then forced down by a movement of the wrist that brings the latter upward. Wrist and finger joints being held firm, the wrist tends to swing the hand down, but is moved up by the resistance of the key. The weight of the forearm is thus brought into play. The same result may be obtained by allowing the wrist to drop, in which case also as much weight may be employed as desired. Immediately after striking, the wrist must return to its normal position, and the finger hold the key down lightly. This will give a "singing tone," and should be practiced with each finger.[203]

Theodore Leschetizky was considered "one of the most successful representatives of the old school" by Kochevitsky.[204] Leschetizky himself stated "As far as method is concerned, I teach exactly as Czerny taught me; I have added nothing, changed nothing."[205] However, Leschetizky's emphasis on careful listening to achieve a beautiful tone quality, the use of a flexible wrist in combination with firm finger-tips and his ability to enhance each student's individual artistic potential established him as one of the significant teachers of the late nineteenth century.

2.10 CONCLUSION

Historical perspectives and pedagogical thoughts on tone quality in the nineteenth century were examined. Each pedagogue's teaching treatises presented different perspectives. Pedagogues in their teaching methods included physical positioning at the pianoforte as a factor to produce ideal tone quality however, pedagogues' opinions about

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[202] Ibid., 26.
[203] Ibid.
[204] George A. Kochevitsky. *The Art of Piano Playing: A Scientific Approach*. (Evanston, Ill: Summy-Birchard Co, 1967), 7.
[205] Methuen-Campbell. "Leschetizky, Theodor."

physical positioning differed. Türk and Czerny considered dynamic range, shading and tone quality as an important aspect of expression. Noises were considered to be avoided for the quality of tone by Czerny, Lebert and Stark. Legato and its relation to phrasing was also considered as influence on the quality of tone. Clementi, Theodore Kullak, Mason, Leschetizky stressed quality of singing. Critical listening and the need of ear training were stressed by Leschetizky and Deppe. Many pedagogues such as A. Kullak, T. Kullak, Mason and Leschetizky believed that different methods of touch could achieve various tone qualities.

In the nineteenth century, teaching methods emphasized finger development and finger strength despite of the changes in instruments. Pedagogues and pianists began to be aware of arm weight in their playing as the mechanism of the pianoforte developed. Toward the end of the century, pedagogues started to address the importance of using the muscles of the upper arm, the entire playing mechanism, coordinated action of all parts of the arm movement, the weight of the arm and relaxation. A. Kullak, Mason and Deppe could be considered important pedagogues in this regard.

From the end of the nineteenth century, tone quality was investigated by acoustic scientists and pedagogues. Numerous methods and books pertaining to tone quality began to appear. Chapter three discusses how pedagogue's thoughts on the quality of tone changed with the stream of scientific experiments through examining teaching treatises in the twentieth century.

CHAPTER 3

TWENTIETH CENTURY

Technique progressed with the gradually increased knowledge of both the physical and physiological aspects of piano playing, especially the functions of the arm. By the early 1900s, using arm weight and relaxation became one of the important developments in piano technique. Rudolph Breithaupt and Tobias Matthay presented arm weight and relaxation as key mechanisms of piano technique. Psychology of human being and function of the nervous system in piano paying was recognized in the twentieth century. Psychological aspects of imagination, taste, and reasoning were considered as influential factors. Inner mental conception, physical movements, and the actual tone quality were considered to be closely related.

Regarding the quality of tone, various findings and opinions based on either scientific experiments or personal experiences were published. Physicists and acoustic scientists asserted that differences in tone quality are differences in pitch, intensity, duration, and in combination of tone and noise. Conversely, pianists and pedagogues believe that pianists have control over tone quality. There are widely varied opinions on what constitutes a beautiful and desirable tone and how it is produced on the piano between scientists and musicians as well as among piano pedagogues. This chapter discusses pedagogues' teaching treatises in the twentieth century and how scientific experiments affected their thoughts on the quality of tone.

3.1 TOBIAS MATTHAY (1858–1945)

Tobias Matthay was a renowned English teacher, influential pedagogue and author on piano technique who taught at the Royal Academy of Music in London. His most prominent students were Myra Hess, Edwin York Bowen, Irene Scharrer, Thomas Harold, Hunt Craxton, Vivian Langrish, Moura Lympany and Guiomar Novaes.[206] Matthay wrote numerous books on piano technique, including *The Act of Touch in all its Diversity* (1903), *Relaxation Studies in the Muscular Discriminations Required for Touch, Agility and Expression in Pianoforte Playing* (1908), *Some Commentaries on the Teaching of Pianoforte Technique* (1911), *The Child's First Steps in Pianoforte Playing* (1912), *The Fore-Arm Rotation Principle in Pianoforte Playing* (1912), *Musical Interpretation* (1913), *The First Principles of Pianoforte Playing* (1919), *The Nine Steps towards Finger Individualization through Forearm Rotation* (1923), *The Visible and Invisible in Pianoforte Technique* (1932/1947), *The Epitome of the Laws of Pianoforte Technique* (1931), and *Piano Fallacies of To-Day* (1939). Matthay explained his theories on piano technique and his teaching method in his first book, *The Act of Touch in All Its Diversity*,[207] and they were more succinctly explained in *The Visible and Invisible in Pianoforte Playing.*[208] He examined the physical aspects of piano playing, categorized the various piano playing movements into touch-species and emphasized muscular relaxation and forearm rotation. He greatly emphasized arm-weight with relaxation due to its production of a singing tone quality at the pianoforte.[209]

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[206] Frank Dawes. "Matthay,Tobias," *Grove Music* Online, https://doi.org/10.1093/gmo/9781561592630.article.18096 (accessed January 26, 2017).

[207] Tobias Matthay. *The Act of Touch in All Its Diversity: An Analysis and Synthesis of Pianoforte Tone-Production*. (London: Longmans, Green and Co, 1903).

[208] Tobias Matthay. *The Visible and the Invisible in Pianoforte Technique*. (London: Oxford University press, 1932).

[209] Matthay. *The Act of Touch*, 22.

Matthay perceived that tone-production was an art that relied on physical laws; it was a question of mechanics, physics, physiology and psychology.[210] He stated, "No effect can possibly arise from the instrument without a physical cause. Being causes, there must be laws that determine each effect."[211] Matthay stressed the understanding of two prominent features of tone-production: the instrument and muscular conditions. Matthay expressed that instrumental education implied

> that we must learn thoroughly to understand the nature of the instrument, and the conditions under which alone it will respond to our wish. We must learn thoroughly to understand what is the nature of the particular treatment the key demands for each and every sound-kind, and shading; since it is alone through such difference in treatment that each difference in Tone can be induced.[212]

Matthay emphasized the piano mechanism and key treatment as an essential factor in tone-production. He described the act of key depression thusly:

> To obtain the best result from this tone-producing motion you must never hit or jerk a key down. Instead, you must always produce the down-speed *gradually* – by acceleration. This acceleration during descent must be not only "gradual," it must be at an *increasing* rate of increase as the finger goes down with the key – it must be at "increasing ratio."[213]

He believed that this gradual acceleration of key descent was integral in producing good tone quality. He stated, "Good tone, ease in production, and control of tone, can only be obtained by *gradually* pressing the Key into motion. Only in this way can you obtain perfect control over tone, good "singing" tone, and good *quality* of tone."[214] Therefore the tone must be attained by proper acceleration during key-descent.[215]

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[210] Ibid., 20.
[211] Ibid.
[212] Ibid., 23.
[213] Matthay. *The Visibe and Invisible*, E5.
[214] Ibid., 7.
[215] Ibid., 137.

Regarding muscular education as another prominent feature of tone-production, he stated:

> We must acquire, and must subsequently from into habit, all those different sets of muscular-conditions (of activity and relaxation) which alone will best enable us to fulfil these differences in key treatment, essential for the production of each difference in sound-shading. For we see, that as contrast in sound can only be induced by contrast in key-treatment, therefore, to secure such contrast, the muscular conditions must also in each instance be modified.[216]

Matthay determined that in order to produce the well-sounding effect, the pianist must use accurate finger and hand exertion in cooperation with proper arm condition.[217] He stressed the understanding of both "muscular action" and "limb-action." He stated that

> It is physiologically and psychologically *impossible* for us *directly* to provoke or prompt any particular muscle into activity by any act of thinking of it, or wishing or willing it, no matter how concentrated our effort. Muscles can only be provoked into action INDIRECTLY, by our willing a particular *limb-exertion* or *movement*.[218]

He believed that pianists would obtain knowledge about the sensations of the particular stresses and relaxations the playing-limb required through analysis of these experienced sensations when producing the correct effects.[219] In his teaching method, Matthay particularly stressed relaxation as the requisite element of tone-production. He warned that stiff wrists and stiff fingers were the outcome of incorrect or impeded muscular action. He wrote:

> Not only does weak and bad tone result from such bad *Production*-tone, bad both as to quantity and as to quality; but agility, accuracy in legato and staccato, and accuracy even in Time and Rhythm itself, all seem almost impossible of attainment under such conditions.[220]

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[216] Ibid., 23-24.
[217] Ibid., 137.
[218] Ibid., 15.
[219] Ibid., 16.
[220] Matthay. *The Act of Touch*, 22.

He believed that tone quality and tone-inflection were possible when playing with a relaxed arm and relaxed elbow. He elaborated further:

> Remember, you can still retain perfect mastery over tone-inflection when playing *forte*, so long as you leave your *upper arm (and elbow) free* when you have to add the necessary down exertion of the forearm; and that it is then almost *impossible* for you to make a really nasty noise. Whatever the ultimate explanation of the effect, you will thus play your *forte* and *fortissimo* with a full, pleasant tone, even on a hard-hammered Piano, and it will actually sound REALLY *louder* than with the forced variety![221]

Matthay clarified the function of arm weight by saying "Weight never really produces the tone," and "its function always is but to form a stable foundation, sufficient to resist the reactions of finger-and-hand exertions, so that these can be effectively applied to Key."[222] Matthay further clarified those ideas, writing,

> Do not imagine that it is by an actual *fall* of the weight that tone is produced, and that "the greater the weight the quicker the *speed*." That is a total misap-prehension, and quite untrue physically. An ounce falls with precisely the same speed as a tone – although the *impact* of a ton is vastly different matter from the impact of an ounce! Weight is needed solely as a Basis. True, the *height* from which a weight falls would influence the speed, for a weight gathers speed as it falls. But this fact cannot be taken advantage of in playing the Piano – since such "free fall" of the arm would preclude our attaining any musical certainty. The reason being, that if you "drop" your arm uncontrolled upon the key, you cannot possibly *feel and judge* how much force is needed *by that key* for that particularly desired tone – and it always *should* be desired tone. Nor can you thus provide the due degree of *acceleration* needed during Key-descent. Such uncontrolled drop of the arm would instead reduce everything to mere guesswork and good luck – or more probably, bad luck! It is altogether alien to the expression of Music-sense. Therefore, never let your arm drop or fall upon the keys uncontrolled by its upholding muscles.[223]

Matthay defined weight-transfer as the arm condition that weight passed on from key-bed to key-bed.[224] He regarded forearm rotation as the intervention of this twisting or

[221] Matthay. *The Visible and the Invisible*, 139.
[222] Ibid., 41.
[223] Ibid., 39-40.
[224] Ibid., 29.

untwisting function of the forearm. Without forearm rotation, no species of tone-production would be possible.[225] Another important principle Matthay discussed was the concept of using action and re-action to apply the needed power to attain the intended tone.[226] He specified further:

> *Hence you cannot* actuate or exert your finger efficiently, unless you help it by the Hand-and -Arm element in some form or other. Without such efficient *Basis* or Foundation, your finger-action will certainly fail in its purpose to move the key accurately. When you apply force with the tip of your finger against the key to move it, the reaction is felt at the *knuckle*; consequently you must supply a stable *basis* there at that moment – the knuckle must not give way, else you will lose your intended effect. This required steady Basis at the knuckle is obtained by *exerting* (or actuating) your Hand during the moment you use your finger for key-depression.[227]

Regarding touch, Matthay suggested two modes of finger action: the thrusting or bent finger action and the clinging or flat finger action. He noted the distinct sound qualities of those two finger actions and that the thrusting or bent action produced a dry effect and a less resonant tone quality. He wrote that

> With the "thrusting" finger the tone can neither be sympathetic, full, nor carrying in melodic passages. Nicety of tone-*control* is also greatly stultified. For "dry" effects it may be appropriate, but the unavoidable elision of *upper*-arm weight with this form of finger-action precludes all true volume or resonance *in fortes* – as a musical ear would describe the result.[228]

He considered the clinging or flat action was more elastic finger action that produced a richer tone quality. He wrote:

> Applied to the key, the whole limb here remains far more elastic than in the opposite forward or thrusting touch previously described. Thus it renders proper key-acceleration more easy for you, and thus also an easier attainment of full, sympathetic, carrying tone, and of nicety of tonal gradation and control.[229]

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[225] Ibid., 152.
[226] Ibid., E8.
[227] Ibid., E8-9.
[228] Ibid., E34.
[229] Ibid.

Matthay stated that all possible touch varieties freed all tone quantity and quality options and created varying opportunities for dexterity.[230] He used the term species of touch to classify and differentiate the three distinct muscular combinations: a self-supported loose-lying hand touch, the conjoint action of the finger and hand touch, and the employment of all three muscular components including arm-weight release, in conjunction with hand and finger-activity against the key during descent.[231] He emphasized choosing appropriate muscular combinations or appropriate movements between arm, hand and finger touches. He stated that

> For each particular passage differs in its technical requirements, and it is therefore supremely necessary that we should choose the most appropriate *muscular-combination* (or construction of touch) for each – be it a singing-passage, or one of brilliance, – a slow one or quick one, – be it light or ponderous in tone character.[232]

Matthay declared, "There is practically no such thing as tone-production solely by exertion of the finger. It must always be Finger-exertion PLUS hand and arm, in some form or other."[233] As he developed his beliefs on tone quality through the controlled act of touch, he expressed his objections to scientific experiments conducted on tone quality and to scientists' assertions of the impossibility of tone quality differences:

> It seems to be mistakenly assumed that these experiments prove quality-differences to be impossible, whereas in point of fact they triumphantly prove their existence… Pseudo-scientists in the past have always tried to persuade us, musicians, that variations in the degree of loudness were the possible ones, and that we, who instead we could hear variations in the quality (or timbre) of the tone were suffering from foolish hallucinations. …The false assumptions were based on the fact that the hammer, during the last thirty-second of an inch of its journey to the string, is thrown at it, and "therefore" only quantitative inflections were possible; quite overlooking the fact that the string has some say in the matter, and also that we are dealing with an elastic hammer-shank, which when ill-used, may

[230] Matthay. *The Act of Touch*, 239.
[231] Ibid., 239.
[232] Ibid., 214.
[233] Matthay. *The Visible and Invisible*, 19.

> cause a raking of the hammer-head on the string, thus calling forth from it unparliamentary language! Other elements may also contribute – for instance, the key itself lies loosely on the key-frame and may jump.[234]

Matthay argued that their experiments did not offer convincing data, and he asserted that quality differences were achievable through the act of touch.[235]

Tobias Matthay was a strong proponent of relaxation and of using weight and was an advocate of the tone quality differences produced by the act of touch. Matthay was a supremely influential teacher in England in the first half of the twentieth-century, and his theories and writings greatly influenced the history of piano technique and pedagogy.

3.2 ISIDOR PHILIPP (1863-1958)

Isidor Philip was a prominent French pianist, composer, and pedagogue. He studied with Georges Mathais (a pupil of Frédéric Chopin) and Friedrich Kalkbrenner at the Conservatoire de Paris, and he also received pianistic advice from Camille Saint-Säens, Stephen Heller (a pupil of Carl Czerny), and Théodore Ritter (a pupil of Franz Liszt).[236] He taught at the American Conservatory of Fontainebleau from 1921 to 1933, and was a pre-eminent piano professor at the Conservatoire de Paris from 1893 to 1934. During World War II, he taught piano at the Conservatoire de Musique du Québec a Montréal and in New York City. Numerous students who would rise to prominence studied with Philipp: Harold Bradley, Aaron Copland, Federico Mompou, Dwight Anderson, Grace Barnes, Emma Boynet, Guiomar Novaes, Soulima Stravinsky, Louise Talma, Alexander Tcherepnin, Beveridge Webster, and Victor Young.[237] Philipp

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[234] Ibid., 136.
[235] Ibid.
[236] Maurice Hinson. "Philipp, Isidore," *Grove Music* Online, https://doi.org/10.1093/gmo/9781561592630.article.A2257881 (accessed January 26, 2017).
[237] Ibid.

published original pieces, transcriptions and volumes of exercises, such as *Exercises for Independence of the Fingers* and *Exercices de tenues*, and edited numerous works by French *clavecinistes*, English virginalists, Albéniz, Bartók, Debussy, Fauré, Mozart, and Scriabin.[238]

His best-known pedagogical work remains *Complete School of Technique for the Piano*.[239] This method book included various exercises to enhance the finger flexibility and independence, finger extension and independence and to develop finger resistance. His exercises comprised extensive short study patterns based extensively on the diminished seventh chord. In those exercises certain tones were intended to be held with individual fingers. A distinct feature Philipp advocated in his method book was rhythmic practice schemes. The rhythmic practice schemes were forms of accentuation with alternating strong and light strokes using different fingers on different notes throughout the passages. Philipp strongly recommended the persistent use of rhythmic practice schemes. In addition to those schemes, Philipp also advised working with different dynamics, tempi and touches - staccato, portamento and legato. The height of finger movement and the force of the stroke increased stepwise. He suggested transposing each exercise into every key and practicing with various degrees of dynamics from *ff* through *pp*.[240]

Philipp's approach to hand position involved fully curved fingers, raised and rounded knuckles and loose and low wrists.[241] According to his student Jacqueline

[238] Charles Timbrell. *French Pianism: An Historical Perspective: Including Interviews with Contemporary Performers*. (White Plains, N.Y.: Pro/Am Music Resources, 1992), 79.
[239] Isidor Philipp. *Complete School of Technic for the Pianoforte*. (Philadelphia: Theodore Presser Co., 1908).
[240] Ibid., 8.
[241] Ibid., 22.

Blancard, he said that "the hand should be held like a conch shell."[242] A characteristic feature of Philipp's technical approach included emphasizing finger independence. Nikita Magaloff, another of his students, stated that Philipp's teaching focused on finger technique and finger independence in particular.[243] Jeanne-Marie Darre, who studied with both Cortot and Philipp, also stated that Philipp's approach included less attention to the arm and shoulder than Cortot's approach.[244] Philipp also warned against muscular stiffness. He stated, "Above all it is important steadily to endeavor to acquire a round and full tone without producing muscular stiffness."[245] According to Philipp, practicing with suppleness would result in the production of a desirable tone quality. He suggested that students "Practice slowly, with a very supple arm, and strong finger-action, depressing each key to the bottom with a full, round and even tone."[246] Jacqueline Blancard recalled that Philipp asked students to play a single note numerous times, trying each time to produce a different tone quality. She believed that practice lead to a nice, velvety sound in *pianissimo* passages.[247] Furthermore, Philipp believed that "A good mechanism, a beautiful tone, do not constitute talent, but they contribute powerfully to it."[248]

Isidor Philipp acknowledged the importance of suppleness in playing and tone production; however, he mainly focused his teaching and method on the discussion of the principles of and exercises for developing finger independence, respectively. Philipp's method represented French piano teaching in the beginning of the twentieth century.

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[242] Timbrell. *French Pianism*, 81.
[243] Ibid., 82.
[244] Ibid., 81.
[245] Philipp. *Complete School of Technic*, 5.
[246] Timbrell. *French Pianism*, 84.
[247] Ibid., 81.
[248] Philipp. *Complete School of Technic*, 5.

3.3 RUDOLPH MARIA BREITHAUPT (1873-1945)

Rudolph Maria Breithaupt was a German pianist, pedagogue, and music scholar. Breithaupt believed that relaxation and weight were the most important principles of playing technique. In his book *Natural Piano Technique*,[249] Breithaupt endeavored to explain those principles. He considered the weight of the arm as an essential internal condition and the pianist's position at the piano as an essential external condition. Regarding the height of the seat, he advised sitting low at the beginning of the pianist's training:

> The low seat is indispensable only at the outset, i.e. as long as it is a question of making the joints supple, of maintaining relaxation of the muscles of the arm, of accustoming arm itself to assume and retain a position of passive suspension and of developing the shoulder-muscles. Later on, when all these desired conditions have been acquired, the height of the seat will be dictated by the general physical proportions of the individual.[250]

He advocated using the ball-shaped or *umbrella*-hand[251] instead of a rigid hand-pose. He stated, "this pose of the hand is required only to transmit the weight and support the arm."[252] He believed that the best position in any circumstance was "*That of the hand in a state of perfect relaxation, looseness and repose*."[253] Using arm weight was the fundamental element of piano technique:

> The full utilization of the massive weight of the arm (which differs as to quantity and quality with each individual), when combined with the elastic muscular tension of the whole physical apparatus set in motion (shoulder, upper- and fore-arm, hand, fingers), constitutes the fundamental elements of piano-technic. The essential condition of its employment is a clear conception of the various degrees

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[249] Rudolph Breithaupt. *Die natürliche Klaviertechnik*. 2 vols. (Leipzig: C.F. Kahnt Nachfolger, 1905).

[250] Rudolph Breithaupt. *Natural Piano-Technic. Vol. II: School of Weight-Touch. A Practical Preliminary School of Technic Teaching the Natural Manner of Playing by Utilizing the Weight of the Arm*. Translated by John Bernhoff. (Leipzig: C. F. Kahnt Nachfolger, 1909), 7.

[251] Ibid., 9.

[252] Ibid., 11.

[253] Ibid., 69.

> of energy needed - the mental control of the heavy, loose, free oscillating arm, or *realisation of weight*.[254]

He advocated weight-produced touch and disapproved of finger-action without weight because of the inconsistency of sound quality. He specified that

> finger-action without weight, i. e. the old style, produces a thin, wooden, sharp, dry tone, very different from that of weight-produced touch, which embellishes the tone rendering it full, sonorous and round, enabling the artist to put expression and power into his playing, never dreamt of by the old school.[255]

He emphasized the use of weight and whole arm with fully relaxed muscles, and loosened joints in order to produce the finest tone, writing

> Nothing lends the tone (with however much power it be struck) so much sweetness, fullness and roundness as the swinging (elastic) fall of the whole weighted mass with fully relaxed muscles and loosened joints, moderate or little velocity being given.[256]

Breithaupt also considered mentally conceived sound, prepared touch and resolved touch after the attack as immeasurably important aspects of tone quality production. He stated that "The effect of the touch must be conceived and formed in the brain before the note is sounded, and after it is sounded, it must again be softened."[257] However, he disapproved the concept of pressure-tone and "*after*" touch:

> …it is evident how absolutely useless it is to *crush* the bedded key. …it is impossible to affect the tone in any way, once it is sounded, it is nonsensical to continue pressing the key, and holding it down with the finger. For, what good can the continued pressing do, if nothing is attained thereby… Away then with the strength-robbing, tiring "pressure-tone" and with the foolish idea of "*after*" pressure - when there is nothing to press.[258]

[254] Ibid., 11.
[255] Ibid., 56.
[256] Ibid., 67.
[257] Ibid., 69.
[258] Ibid., 66.

Breithaupt also believed in the importance of the mental capacity in the perception of and activity of gradation and shading:

> All instrumental dynamics respond to the mental capacity and the spirit of each individual. The richer, the more varied or graduated the psychical scale of sentiment or emotion, the richer and more varied will be the dynamics of the tone diversified by the most delicate gradations and shadings.[259]

He affirmed that quality of sound was the mental effort of emotion through the co-ordination of muscular movement:

> Indigence of colour or of singing quality in the touch does not invariably indicate poverty of emotion of mind or of musical ability and feeling, any more than richness of tone and colouring necessarily presupposes a superabundance of soul or sentiment. *Every tone is, in fact, the expression of a mental and moral effort of emotion* - passing through a sensory apparatus extremely complicated in its coarser or more delicate elements (sense of pressure, muscular sense, sense of position, action, motion) and necessitating the co-ordination of muscular functions not less numerous.[260]

According to Breithaupt, refined and various styles of touch could be obtained through the mental conception of sound (*sense of tone*):

> An essential condition of every style of touch is the physical ability of the individual to strike the key in such a way, as to produce an ideal tone. The ultimate and highest finish in his art the pupil will learn, not through abstract contemplation, but solely through the medium of his sense of tone, of so-called timbre. The effects of tone-colouring penetrate so deep and are so lasting, that many a talented person has solved the problem and secret of touch by listening, not by practising.[261]

He stated that the degree of dynamic intensity was closely related to all other tonal effects. He recognized that

> *All forms* and manner *of percussion* (touch), without exception, *differ only in intensity*, i. e. in the force applied in the percussion (touch), which again results from the product of rapidity and weight. Hence every "stroke" and every *tonal*

[259] Ibid., 65.
[260] Ibid.
[261] Ibid., 68.

> *effect are dynamic products*: all tonal effect corresponds to a certain degree of dynamic intensity.[262]

He discussed tonal shading in piano playing:

> …in speaking of the "formation of the tone" and "timbre" on the piano, where the tone is already made, we can only refer to a graduating of the tonal intensity; for we cannot really speak of a diversity of "tone colour", and of "forming a tone" which is already formed. In admitting "tone-shading", we can only refer to such "nuances" as result from the vibration of, or the form of contact with, the playing body, i. e. from the different degrees of *weighting the keys* or from the greater or lesser intensity of pressure and from the velocity imparted to the key.[263]

Breithaupt advocated three motions when executing the attack: a swinging motion, a rolling motion and a gliding motion. He described the sound quality of each motion as follows:

> The deep swing of the hand produces a round, full and sound tone, provided the weight and velocity required are given. The high-swung hand is calculated rather to produce a more pointed, accented tone, in consequence of the greater velocity gained by stretching out the fore-arm. The rolling motion adapts itself advantageously to soft, sweet, delicate tone-production, provided the motion of arm, hand and finger is a pliant action, or in other words, provided the velocity imparted to the key is slight. Similarly, the gliding motion effects a grand singing quality and possesses an ideal charm of tone. …and the tone the most beautiful of all, owing to its being held (spun) somewhat longer (as long as the damper permits), and thus being brought out and developed to the fullest effect of its over-tones.[264]

Breithaupt recognized upper partials, pedaling and the construction of the instrument as critical factors in producing a beautiful tone. The upper partials were "a general constituent of all musical tones, and that a certain stock of upper partials is an essential condition for a good musical quality of tone."[265] He considered pedaling to be a factor

[262] Ibid., 65.
[263] Ibid.
[264] Ibid., 69.
[265] Helmholtz. *On the sensation*, 58.

that directly affected the upper partials and the beautiful tone quality.[266] He stated that the inherent quality of the instrument also influenced the quality of its sound. He wrote that

> The instrument produces a tone "ready-made" in the construction of the instrument, the volume of which depends upon the vibrating capacity of the whole sonorous body of the instrument as also upon the form of the vibration (upper partials).[267]

Rudolph Maria Breithaupt was a proponent of weight technique and perfect relaxation. Although his emphasis on arm-weight movement and relaxation could be considered extreme, his influence on piano pedagogy and efforts to systemize the teaching of arm weight and relaxation were remarkable.

3.4 JOSEF LHÉVINNE (1874-1944)

Josef Lhévinne was a Russian pianist and teacher. A renowned pianist in his time, his control of tone and phrasing were of particular note.[268] He studied piano with Vasily Safonov at the Moscow Conservatory, and he taught at the Moscow Conservatory from 1902 to 1906. Lhévinne married a pianist, Rosina Bessie, in 1898. After the war, Lhevinne moved to New York where he and his wife taught at the new Juilliard Graduate School. His pupils included Adele Marcus, Sascha Gorodnitzki, Brooks Smith and Homer Samuels.[269] Lhevinne published *Basic Principles in Pianoforte Playing* in 1924. In this book, he addressed many aspects of piano playing, including rests as an artistic value of silence, the necessity of developing rhythm, logical fingering, the study of harmony and ear training. However, Lhevinne primarily emphasized tone quality and the

[266] Breithaupt. *Natural Piano-Technic*, 70.
[267] Ibid,. 65.
[268] Jerrold Northrop Moore. "Lhevinne, Josef," *Grove Music* Online, https://doi.org/10.1093/gmo/9781561592630.article.16552 (accessed September 27, 2017).
[269] Ibid.

principles of touch. Regarding beautiful tone quality, Lhevinne addressed the importance of the pianist's mental concept. He wrote, "every piano student who aspires to acquire a beautiful tone must have a mental concept of what a beautiful tone is. Some people are born with a sense of the beautiful in sound."[270] He believed a sense of tonal beauty could be developed with persistent efforts and experience listening to pianists who produced a beautiful tone quality.[271]

He believed that touch was an individual matter and that the nature of the player's hand was an important aspect for touch and tone. He felt that "the thicker the cushions of flesh upon the fingertips, the wider the range of variety of touch."[272] Regarding touch, he wrote, "touch is a matter of elimination of non-essentials, so that the greatest artistic ends may be achieved with the simplest means. This is a general principle that runs through all the arts."[273] Lhevinne claimed that movement in the fingers should be discouraged except for the movements that occurred at the metacarpal joints.[274] He wrote, "The finger moves as a whole and at one joint only – the joint connecting the finger with the body of the hand."[275] For the best tone quality when the key is played, Lhevinne suggested using the resilient fleshy part of the fingertip. He elaborated further:

> If the part is well covered with cushions of flesh, the tone is likely to be far better that if it were hard and bony. Therefore, the main principle at the first is to see that the key is touched with as resilient a portion of the finger as possible, if a lovely, ringing, and singing tone is desired… What part of the fingertip is this? Certainly not the part immediately behind the fingernail. Just little farther back in the first joint of the finger you will notice that the cushion of flesh is apparently more elastic, less resisting, more springy.[276]

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[270] Josef Lhevinne. *Basic Principles in Pianoforte Playing*. (New York: Dover, 1972), 17.
[271] Ibid., 17.
[272] Ibid., 14.
[273] Ibid., 12.
[274] Ibid.
[275] Ibid., 18.
[276] Ibid.

He stated that the surface of the finger also affects tone quality. He wrote:

> The smaller the surface of the first joint of the finger touching the key, the harder and blunter the tone; the larger the surface, the more ringing and singing the tone. Naturally if you find a passage requiring a very brilliant, brittle tone you employ a small striking surface, using only the tips of the fingers. This is just one of the elements of good piano tone; but it should be mastered.[277]

He objected to stiffness in the fingers and the hands. He believed that "Without the elasticity there will be no richness of tone or beauty of tone color."[278] He also discussed the important role of the wrist in the production of good tone quality. He stated that

> The wrist is the spring or the shock absorber. For this reason it is next to impossible to produce a good singing tone with a stiff wrist. The wrist must always be flexible. The more spring the less bump; and it is bumps that make for bad tone on the piano.[279]

Lhevinne noted that a sound bump at the end of the tone is offensive; therefore, the pianist should carefully attend to key release and employ a gradually raised wrist technique. He stated that

> At the end of the tones in melodic passages the student reverses the process by which he produces the tone. The wrist must be gradually raised until the finger leaves the key" and "the key itself ascends gradually and the bumper touches the wire without the "bumping off" sound."[280]

He applied the same principle to staccato playing. He suggested that raising the wrist to reduce the noise and to increase the lightness and character of the staccato note.[281] Lhevinne advocated pressing the key to the bottom of the key bed to produce the best tone quality, writing

[277] Ibid., 19.
[278] Ibid., 13.
[279] Ibid., 19.
[280] Ibid., 23.
[281] Ibid., 36.

> One general principle is that of striking "key-bottom." Many students do not learn this. The piano key must go all the way down in the production of a good tone. The habit of striking it half way accounts for much white or colorless playing.[282]

He believed that finger touches on the key-surface should be more like that of grasping the key, not hitting or striking.[283] This touch, without any sense of being forced or hammered, could produce beautiful tone quality. Lhevinne also stated that "well-played legato notes on the piano must float into each other."[284] He noted that quality of tone and touch played crucial roles in legato phrasing. He elaborated that

> The floating effect is not possible unless the quality of the tone of the notes is similar. In other words all the notes must be of the same tonal color. A variation in the kind of touch employed and a legato phrase may be ruined.[285]

Lhevinne recognized pedaling's atmospheric effects and enumerated his thought on pedal use: full pedal, a half pedal a one-quarter pedal, and a just touch. However, he stated "there is no hard and fast rule, each phrase is a law unto itself."[286]

Josef Lhevinne's teaching and method book revealed the importance of the pianist's mental conception of tone quality, and touch as the primary elements of playing the piano. Lhevinne was one of the significant teachers and pianists who contributed to piano pedagogy in the United States in the twentieth century.

3.5 ALFRED CORTOT (1877-1962)

Alfred Cortot was a French pianist and conductor. He studied the piano at the Paris Conservatoire with Émile Decombes, who was one of Chopin's disciples, and Louis

[282] Ibid., 15.
[283] Ibid., 21.
[284] Ibid., 37.
[285] Ibid.
[286] Ibid., 47.

Diémer.[287] Cortot was a leading professor of piano at the Paris Conservatoire from 1907 to 1923, during which time his pupils included Clara Haskil, Yvonne Lefébure, Marcelle Meyer and Vlado Perlemuter. Cortot founded the École Normale de Musique in 1919. His playing revealed lyrical delicacy, nobility and astonishing tonal variety, and he was considered "an ardent champion of the new French piano music of his day."[288] Cortot's observations on piano technique appeared in his *Rational Principles of Pianoforte Technique*, which was published in 1928.[289] In the book, Cortot stated that psychological and physiological factors formed the basis of any instrumental study. He emphasized the instruction of a student's psychological side:

> For the development of the psychological side, which is above all a function of personality and taste, pedagogy can rely only upon the enrichment of general culture, upon the development of the imaginative and analytical faculties which open the way to the translation of the emotions and sensations evoked by music.[290]

Cortot believed that the psychological factors of imagination, taste, reasoning, and style influenced a pianist's shading and tone choices. However, he primarily discussed the physiological factors of shading and tone in his book. He believed that physiological factors were linked to the dexterity of the hands and fingers, and to the control of the muscles and nerves. He stressed evenness, independence and mobility of the fingers and flexibility of the wrist, and he wrote exercises to help pianists obtain these techniques. He disapproved of mechanical practice and pointed out that mechanical and "long-repeated" practice were problems in pianistic technique.[291] He believed that his exercises

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[287] Martin Cooper, and Charles Timbrell."Cortot, Alfred," *Grove Music* Online, https://doi.org/10.1093/gmo/9781561592630.article.06587 (accessed January 26, 2017).

[288] Ibid.

[289] Ibid.

[290] Alfred Cortot. *Rational Principles of Pianoforte Playing*. Translated by R. le Roy-Métaxeas. (Paris: Editions Salabert, 1928), 1.

[291] Ibid.

contributed to the suppleness of fingers, hands and wrists. Cortot wrote exercises for the reasoned loosening of all the pianist's muscular apparatus, finger, hand, wrist and even forearm.[292] He emphasized the importance of complete muscular relaxation in piano playing and stated that

> Physical effort, if not followed by complete muscular relaxation, is prejudicial to any form of training. It is thus that the technical formula, whose regular use will ensure the upkeep of a thoroughly supple mechanism, docile to every exigency of execution, will henceforward be presented.[293]

In his teaching method, Cortot emphasized evenness of finger touch, agility, and developing light and airy styles of sound. He believed that a vast array of expression could be realized through the evenness of finger touch and that a variety of tones could be created through the diversity of attack.[294] He considered wrist movement to be an essential playing technique:

> Since the tone of the instrument is produced by the concussion of the hammers on the strings and since this concussion results from the action of the fingers upon the keys, it seems reasonable enough to conclude that the mobility and agility of the latter are the only important factors in the technique of the key-board. In reality, deprived of the help rendered to the fingers by flexibility of the wrist, this action has rather limited results.[295]

Cortot was described as having a keen ability to use his ear to obtain particular tone qualities through pedaling,[296] but he did not discuss pedaling in his method book.

Alfred Cortot acknowledged the importance of psychological factors of piano playing. While his contemporary French pedagogues focused on finger technique, Cortot advocated evenness of finger touch, the involvement of the arm, and relaxation. Cortot's

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[292] Ibid., 4-6.
[293] Ibid., 2.
[294] Ibid., 9.
[295] Ibid., 72.
[296] Charles Timbrell. French Pianism: An historical Perspective: Including Interviews with Contemporary Performers. (White Plains, N.Y.: Pro/Am Music Resources, 1992), 107.

teaching and method book reflected a different approach in French piano teaching in the twentieth century.

3.6 OTTO RUDOLPH ORTMANN (1889–1979)

An American music educator, Otto Ortmann served as a director at the Peabody Conservatory, and taught music at Groucher College and psychology of music at Johns Hopkins University. Ortmann wrote two significant books: *The Physical Basis of Piano Touch and Tone* (1925)[297] and *The Physiological Mechanics of Piano Technique* (1929)[298]. Ortmann conducted thorough investigations on piano tone and touch, and discussed these subjects in depth in his works. In the *Physical Basis of Piano Touch and Tone*, Ortmann examined tone production, touch and the properties of piano tone based on acoustics, mechanics and physics. He included discussions of the instrument, including key-depression, vibration of string, hammer-stroke, sound-board, touch, noise-element, and tone combination. He detailed more comprehensive, scientific experiments and studies on piano technique in *The Physiological Mechanics of Piano Technique*. This book contained expanded discussion about the playing mechanism, including bones, muscles, muscular contraction and coordination, relaxation and tension, and tone quality. Ortmann recognized the importance of psychological aspects of piano playing, but mainly focused on mechanical and physiological aspect in those method books. He stated that "Efficiency of bodily movement, including the fine movements used in piano-

[297] Otto Ortmann. *The Physical Basic Basis of Piano Touch and Tone: An Experimental Investigation of the Player's Touch Upon the Tone of the Piano*. (London: K. Paul, Trench, Trubner & Co. Ltd, 1925).

[298] Otto Ortmann. *The Physiological Mechanics of Piano Playing Technique: An Experimental Study of the Nature of Muscular Action As Used in Piano Playing, and of the Effects Thereof Upon the Piano Key and the Piano Tone*. (London: K. Paul, Trench, Truber & Co, 1929).

playing, is directly connected with a particular area of the brain known as the motor area."[299]

Ortmann attempted to clarify his beliefs and findings on relaxation, fixation, weight transfer and tone quality. He argued that relaxation was stressed in piano pedagogy but that the use of the term had been misconceived. He believed that a completely relaxed joint did not exist:

> The property of muscle-tone exerts at each joint relatively constant for each muscle or group of muscles. Accordingly, a completely "relaxed" joint does not exist anywhere in the human body. I use "relaxed" here in the sense of zero resistance. …there is always pressure of one articulating surface upon the other. Since this, in a degree varying with the growth of the organism, has been present in all joints from birth, we are not aware of this force or of its effects, and what the mind considers complete relaxation, in the absence of any sensation to the contrary, is not complete physical or physiological relaxation. This normal joint-resistance, instead of a zero-point, must form the basis of an analysis of relaxation.[300]

Ortmann stated that "With the finger-tip resting upon the key, the finger joints fixed and the hand-knuckle relaxed, the force exerted upon the key will be a part of the weight of the finger. This is constant and cannot be modified without muscular contraction."[301] He affirmed that resting of the arm upon on the keys was not a relaxed arm condition, but mild fixation existed in all joints.[302] He elaborated that

> The shoulder supports the entire arm, the elbow supports the forearm and hand, the wrist supports the hand, and so on. And, since in all controlled movements some retention of position is necessary, relaxation in any pianistic touch-form is relative, being accompanied by a perceptible degree of fixation at all times.[303]

According to Ortmann, fixation of the joints was required in weight transfer:[304]

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[299] Ibid., 71.
[300] Ibid., 60.
[301] Ibid., 126.
[302] Ibid.
[303] Ibid., 125.
[304] Ibid., 143.

> The application of weight to the piano-key means a certain degree of muscular contraction. As this weight is transferred to another finger, the muscles controlling that finger are appropriately contracted in order to support the weight; and the muscular contraction for the first finger is correspondingly lessened as weight is released. If the relaxation for the first finger is greater than the contraction for the second finger, weight is lost; it is removed from the first key before the next finger is ready to take it up on the second key. But if the release is slower than the following contraction, there will be no loss of weight. Rather, there will be an overlapping of weight, which, on an instrument made to record weight fluctuations, will show in an actual increase in weight. On the keyboard it will result in unnecessary pressure upon one of the two keys.[305]

Ortmann asserted that weight transfer was impossible in a percussive touch.[306] He suggested a very slow tempo, soft dynamic range, and a non-percussive touch when teaching legato playing through weight transfer.[307] Ortmann also investigated various touch forms and their relationships to tone. Differences in touch involve differences in the speed of key-descent and affect string vibration.[308] He asserted that percussive and non-percussive touches represented qualitative differences, but all other touch classifications represented quantitative differences in key-speed.[309] He believed that rigidity tended to produce greater key-speed and a louder tone than relaxation.[310]

Ortmann believed that tone quality differences were due to differences in intensity. He objected to words such as shallow, harsh, forced and dry as description of tone intensity. He investigated selected tone qualities in terms of intensity, duration, percussiveness and the attack and release of the key. A distinct form or shape of curve represented each sound's quality. Intensity was characterized as the vertical displacement of a curve, and the duration of stroke and pressure was characterized as the horizontal

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[305] Ibid., 134-135.
[306] Ibid., 145.
[307] Ibid., 146.
[308] Ortmann. *The Physical Basis of Piano Touch and Tone*, 33.
[309] Ibid., 33-34.
[310] Ibid., 34.

displacement of a curve.[311] Selected terms regarding tone quality were sparkling, velvety, crisp, bell-like, dry, brittle, singing, and pearly.[312] Ortmann examined the curve shape of each tone quality and claimed that the resulting curves proved that differences in tonal description included differences in intensity, duration and combinations of tone and noise. He affirmed that without differences in intensity, duration, and in combinations of tone and noise, there would be no tonal differences.[313]

Ortmann thoroughly examined the importance of noise elements in tone quality. He asserted, "It is now definitely known through both theory and experiment that all qualitative differences, excepting the variations in the noise-element, are quantitative differences."[314] Ortmann stated that finger-impact noise of touch influenced tone quality differences:

> Some differences between the sounds produced by a high and a low wrist, by rigidity and relaxation, may also be explained by the presence in varying degrees, or the absence of, finger-impact noise. It is important to note that practically all forms of touch used for the production of "good", "sympathetic", "beautiful", or "singing" tone, are forms of touch in which either no finger-impact noise at all, or minimum of such noise is present. And in most cases where disagreeable "tones" are produced, the finger-impact noise is well marked. …The explanation, then, of a number of supposed qualitative differences in tone is to be found, not in the tone, but partly in the accompanying noise production of the finger when it strikes the key.[315]

Four noise elements were presented: the impact of the finger upon the key, the impact of hammer against string, the impact of key against key-bed and friction noises of the action, including the impact of the rebounding hammer.[316] Ortmann described

[311] Ortmann. *The Physiological Mechanics of Piano Technique*, 338.
[312] Ibid., 339-352.
[313] Ibid., 354.
[314] Ibid., 337.
[315] Ortmann. *The Physical Basis of Piano Touch and Tone*, 152.
[316] Ibid.,148.

unsatisfactory tone quality as being shallow or depthless and wrote that it was the result of an unaesthetic ratio of noise to tone.[317] He added that a percussive touch maximized noise and influenced quality of tone.[318] According to Ortmann, noise elements could not be controlled by the pianist. Only the impact of the finger on the key could be controlled by the pianist through percussive and non-percussive approaches. He elaborated:

> There is a direct relation between the manner of touch and the intensity of finger-impact. Thus the impact noise produced by a rigid hand and arm is louder than that produced by a relaxed arm, though the actual arm-speed be the same. That is, if the speed of arm-descent is approximately the same, the relaxed tone-production will be accompanied by less impact noise than the rigid tone-production.[319]

He pointed out that noise created by the impact of the hammer against the string occurred simultaneously with the beginning of sound creation. Noise by the impact of the hammer against the string influenced the quality of the piano's sound-complex:

> Since no tone on the piano can be produced without this noise, since, moreover, the intensity of the noise varies directly with the intensity of the tone, and finally, since for all degrees of normal playing the noise is audible, it follows that the quality of the sound-complex of the piano is partly due to the impact noise and is not purely tonal, as is generally believed.[320]

He also added that noise produced by the impact of the key against the key-bed was highly related to finger-impact noise: when finger-impact noise increases, key-bed impact noise increases as a result.[321] Ortmann delineated the main features of noise elements in relation to quality of tone. He stated that the most marked differences in sound-complexes occurred at the beginning of sound and the most characteristic differences in touch happened between a percussive and non-percussive touch. Good, sympathetic, or

[317] Ibid., 150.
[318] Ibid., 151.
[319] Ibid., 150.
[320] Ibid., 149.
[321] Ibid., 153.

beautiful tone meant creating a sound-complex with a maximum of tonal elements and a minimum of noise elements. He believed that pianists could produce a beautiful tone quality by reducing noise elements, and "the elimination or reduction of noise elements led to the adoption and rejection of certain forms of touch."[322] Ortmann discussed how the illusion created by pianists affected the listener's perception of the sound:

> Illusions are not restricted any one tone-quality. Its presence in *staccatissimo* I have already mentioned, and it functions as well in all touches in which the variations occur before the key is reached, and after it is lifted, and, at times in others, where the finger-position is used to determined tone-quality. Frequently, for example, the pedal is taken on the last note of a phrase in order to avoid an abrupt tone-ending as the hand and arm are lifted from the key. A person, not looking, gets none of the lift or the phrasing; but a person seeing the movement, learns the phrasing and in consequence reacts differently. The player, feeling the phrasing as well as seeing it, reacts differently again.[323]

Ortmann asserted that tone quality was also affected by the timing of key-release, but the manner of key-release did not affect tone quality.[324] He also purported that artistic shading could be found only with "fine gradations of intensity and duration, not in the manner in which fingers and hands were used, nor in any psychic element mysteriously transmitted through the key to the tone."[325] He acknowledged the effects of pedaling on tone color. He stated that when the pedal was depressed, strings began to vibrate sympathetically and to produce rich harmonic color.[326] However, he reinforced the idea that the intensity differences of touch affect pedal effects of color.[327]

Ortmann's investigations focused on the mechanism of the human body while at the piano and the mechanisms' relation to tone production. His scientific research

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[322] Ibid., 159.
[323] Ortmann. *The Physiological Mechanics of Piano Technique*, 357.
[324] Ibid., 352.
[325] Ortmann. *The Physical Basis of Piano Touch and Tone*, 146.
[326] Ibid., 136.
[327] Ibid., 137.

contributed to a reexamination and clarification of theories and practices in teaching methods including coordinated movements, relaxation, weight technique, touch and tone quality. Ortmann's more objective and scientific observations are important considerations in the history of piano technique and pedagogy.

3.7 ABBY WHITESIDE (1881-1956)

Abby Whiteside was an American piano pedagogue and writer who studied music at the University of South Dakota. She served as a piano instructor at the University of Oregon from 1904 to 1907.[328] She then continued her music studies with Swiss pianist Rudolf Ganz in Germany. She returned to the United States, and became a piano faculty member in the Portland division of the University of Oregon School of Music in 1917. Whiteside moved to New York in 1923 and continued teaching piano. Her students included composers Miriam Gideon and Vivian Fine, as well as pianist Robert Helps.[329] Whiteside wrote the books *The Pianist's Mechanism: a Guide to the Production and Transmission of Power in Playing* (1929) and *Indispensables of Piano Playing* (1955). Whiteside believed that the perfect mechanism or technique was not only a means to an end, but could be a creative factor that aid emotional development.[330] She stressed that mechanical perfection could not be attained until each part of the hand and arm was in perfect coordination.[331] She advocated coordinating the use of power from the body's center to its periphery because she believed that the center controlled the periphery.[332]

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[328] Mary Robb. "Whiteside, Abby," *Grove Music* Online, https://doi.org/10.1093/gmo/9781561592630.article.A2293338 (accessed March 20, 2018).

[329] Ibid.

[330] Abby Whiteside. *The Pianist's Mechanism; A Guide to the Production and Transmission of Power in Playing*. (New York: G. Schirmer, 1929), 3.

[331] Ibid., 38.

[332] Abby Whiteside. *Indispensables of Piano Playing*, (New York: Charles Scribner's Sons, 1961), 4.

The pianist's periphery could be considered the actual point of contact the fingers against the keys:

> The body governs the fingers in playing the piano, and no amount of coaching in finger dexterity will ever lead to the easy beauty in playing that must be our objective. The fingers in themselves have no power of coordination. The body must be taught, and the fingers will find their way under the guidance of this central control.[333]

She underscored the transmission of arm-power more than the technique of making finger attacks of equal strength:[334]

> It is almost trite to say that for any sustained effort the energy used should come from the greatest reservoir of power, and for piano-playing that means from the large muscles controlling the arm. Everyone knows this and admits it. Then why are results not in accord with this simple dictum? It is simply because fingers are trained to hit, and the action is so thoroughly learned that they never stop doing it; and just so surely as the tone-producing action comes mostly from the small muscles controlling the hand, there will never be complete control of the energy for playing the large muscles. Most of the failures among piano-players are due to the lack of understanding that the power from the arm plays against a firm finger and reacts at the knuckle.[335]

Whiteside believed that the desired sound quality could be produced from the arm using large muscles. She stated, "A lovely, full tone is the result of constantly using a full tone, and not of playing half the time with the power from the upper arm off, as is true of much so-called finger technique."[336] She acknowledged the fact that the amount of percussive noise was a factor in determining tone quality and that percussive noises varied according to how the pianist delivers power to the key. Therefore, an accurate sensation of coordinated actions for producing power and transmitting it to the keyboard could be an important means of tone quality production.[337] She also emphasized the sensation of the

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[333] Ibid.
[334] Whiteside. *The Pianist's Mechanism*, 24.
[335] Ibid., 5.
[336] Ibid.
[337] Ibid., 38.

distance to the key-bed, and she believed that this sensation could lead to the effective use of power. She wrote, "Accurately gauging the distance to the key-bed is equally necessary if the piano is to yield its utmost in dynamics with the greatest conservation of energy."[338] Being aware of the distance to the key-bed also minimized noise. She emphasized that "A precise delivery of energy, aiming to release the power just before the keybed resistance is reached, will diminish the thud against the keybed."[339]

Whiteside emphasized the importance of the aural image in the production of music. She believed that a great pianist's inner drive for a beautiful and perfect tone quality leads to the perfection of the mechanism:

> The beauty of music being in the ear, the problem is this: how to transfer what is a bodiless aural image into the ultimate contact of fingers against a keyboard of black and white keys. The answer is that this transfer must somehow be all of a piece, it must be centrally controlled by aural image, it must be cohesive. It is the body *as a whole* which transfers the *idea* of music into the actual production of music.[340]

She also claimed that the condition of listening affected finger training and tone production.[341] She emphasized that the ability to listen is indispensable in training the muscles and it will lead to a discrimination in the application of power.[342]

Whiteside drew attention to rhythm and its relation to musical phrase and form. She considered rhythm as the core of the entire playing mechanism and important factor influence to tone production. She wrote that

> A basic rhythm is the *only* possible over-all coordinator, for it is not merely the investigator of beautiful musical production, but it is the sole factor that can

[338] Ibid., 21.
[339] Whiteside. *Indispensables of Piano Playing*, 18-19.
[340] Ibid., 3.
[341] Ibid., 5.
[342] Whiteside. *The Pianist's Mechanism*, 21.

> successfully translate the image in the ear and the emotion which must be at the bottom of all beautiful music into a function of the whole body.[343]

She considered pulsing to be an important means of understanding and interpreting a composition.[344] Whiteside warned against listening and learning through a note-by-note procedure by saying "it literally destroys the possibility of developing one's potential gifts for musical perception. A note-wise procedure can never produce a phrase of supreme beauty."[345]

Abby Whiteside was an influential pedagogue. She believed that tone should be produced by the continuous flow of energy and that the whole body responded emotionally to the contours of a musical phrase. She greatly emphasized perfecting the piano-playing mechanism and understanding muscular coordination, as well as aural listening and aural imagination.

3.8 KARL LEIMER (1858-1944) and WALTER GIESEKING (1895-1956)

Karl Leimer was a German music teacher and pianist. He studied piano at the Stuttgart Music School and was a piano teacher at the Konigsberg conservatory. He then became conservatory's director in 1883. Leimer moved to Hanover, and in October 1897 he founded a private music and theater school, which was the direct precursor of today's College of Music and Theatre in Hanover. Walter Gieseking was a German pianist who studied with Karl Leimer at the Hanover Conservatory from 1911 to 1913.[346] Gieseking was one of the greatest interpreters of the piano works of Debussy and Ravel. His

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[343] Whiteside. *Indispensables of Piano Playing*, 3.
[344] Ibid., 145-146.
[345] Ibid., 5-6.
[346] Bryce Morrison, "Gieseking, Walter," *Grove Music* Online, https://doi-org.pallas2.tcl.sc.edu/10.1093/gmo/9781561592630.article.11111 (accessed January 26, 2017)

gradations of tone and color, coupled with his keen aural sensitivity and pedal technique, were considered remarkable.[347] Banowetz described Gieseking as follows:

> He possessed a wonderful talent for playing fluttery, even classic, techniques and for controlling the vibrations of every note. His tone was one of the most easily recognizable of all the great pianists. It was transparent, nonpercussive, of great dynamic range – qualities that resulted from his phenomenal ear for prolonging vibrations… and, perhaps above all, his masterful pedaling.[348]

A teaching method on piano playing written by Leimer and Gieseking, *Piano Technique* comprised two books. The first book was originally titled *The Shortest Way to Pianistic Perfection* and was published in 1932. The second book *Rhythmics, Dynamics, Pedal and Other Problems of Piano Playing* was written by Leimer in 1938. *Piano Technique* was reprinted in 1972 containing both of the aforementioned books. In the preface to *Piano Technique,* Gieseking emphasized self-hearing and stated that critical self-hearing is the most important factor in all of music study:

> Only trained ears are capable of noticing the fine inexactitudes and unevennesses, the eliminating of which is necessary to a perfect technique. Also, through a continuous self-hearing, the sense for tone beauty and for finest tone shadings can be trained to such a degree that the student will be enabled to play the piano with an irreproachable technique and with a feeling for the sound-beautiful.[349]

Leimer also reinforced that the core of his teaching method was the training of the ear especially self-hearing and the systematic development thereof.[350] Leimer emphasized the importance of tone quality. He wrote, "For the pianist the noticing of the exact tone pitch is, so to say, only secondary when compared with the noticing of the exact tone quality, tone duration and tone strength."[351] Leimer and Gieseking suggested that ear training

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[347] Ibid.

[348] Joseph Banowetz, and Dean Elder. *The Pianist's Guide to Pedaling*. (Bloomington: Indiana University Press, 1985), 230.

[349] Walter Gieseking and Karl Leimer. *Piano Technique*. (New York: Dover, 1972), 5.

[350] Ibid., 10.

[351] Ibid.

should begin with tone quality.[352] A refined ear, technique, and acute mental perception were closely related to each other and enhanced the execution of accurate piano playing:

> To listen unceasingly to tones as they are played, and to control their accurate execution, is the road that must lead quickly to a polished technique. The fingers are the servitors of the brain, they perform the action the brain commands. If, therefore, by means of a well-trained ear, it is clear to the brain how to execute correctly, the fingers will do their work correctly.[353]

In the second part of the book, *Rhythmics, Dynamics, Pedal and Other Problems of Piano Playing*, the authors emphasized the importance of mental perception:

> In order to acquire a perfect technique through brain work, an exact impression of the note picture upon the mind is the first problem which we must solve. Thereafter we should busy ourselves with the study in question, as to fingering, touch, note value, etc., to achieve perfection along these lines in the broadest sense. This occurs quickest and completely through intensive concentration of all intellectual powers and is, therefore, strenuous brain work.[354]

Leimer and Gieseking acknowledged the theories developed and advanced by pedagogues like Deppe, Breithaupt and others. However, they strongly believed that finger development was an indispensable aspect of piano technique.[355] They stated further:

> Since each movement is a result of muscular work, it is imperative that every muscle engaged in the act of stroke and touch be strengthened through exercise. It was indeed an original but utterly wrong idea of pedagogues to insist upon cutting out the active movement of the finger and designating only the equal fixation as necessary means for the touch. The fingers are the members which serve as immediate means in the category of motion.[356]

They stressed sensitivity of fingertip as an important role in tone shading. They stated,

> The key pressure will bear many changes from minimum to maximum weight. The minimum weight must be heavy enough to cause the hammer to sway, while the maximum weight depends upon the strength of the player. The nerves in the

[352] Ibid., 20.
[353] Ibid.
[354] Ibid., 90.
[355] Ibid., 106.
[356] Ibid., 111.

> fingertips are a vital part of tone shading, especially in the application of pressure playing.[357]

For a singing quality of tone, Leimer and Gieseking advocated straightened fingers:

> When rendering a singing tone, I deem it exceedingly important not to bend the fingers too much, but rather to straighten the fingers enough so that the flat part of the first joint of the finger instead of the fingertip will rest upon the key. In this manner the delicate sensory nerves of the fingers come into their own, making it possible for the player to bring forth a large scale of rich tone colors. A pianist feels his way into this style of touch and with it he believes it possible to transfer his impressions to the piano directly.[358]

They also stressed the attainment of a various styles of touch as an important means of producing beautiful tone quality. The freefall, the throw, stroke, swing, the roll, and pressure were the possibilities of touch enumerated by Leimer and Gieseking.[359] With regard to pedal, they acknowledged that different characters of sound are produced with using the damper pedal. They wrote that

> It is logical that a piece which is rendered with pedal will possess a different character of sound than the same piece which is performed without pedal; thus it means that the versatile artist will have to make the most of this difference.[360]

They believed that the pedal should be used for

> its use in the attainment of tone volumes, its aid in the combining of single tones and chords which could not be accomplished by the fingers, and its use in the attainment of aesthetic tonal effects, brought about by the predominance of individual tones and parts of a composition.[361]

Karl Leimer and Walter Gieseking put emphasis on critical self-hearing, mental perception, and various touches to ensure beautiful tone quality production. The insights

[357] Ibid., 110.
[358] Ibid.
[359] Ibid., 106.
[360] Ibid., 138.
[361] Ibid., 126-127.

and theories in their method book greatly influenced piano pedagogy in the first half of the twentieth century.

3.9 ARNOLD SCHULTZ (1903-1972)

Arnold Schultz, an important American pedagogue and writer, published *The Riddle of the Pianist's Finger and its Relationship to a Touch-Scheme* in 1936.[362] Regarding tone quality, Schultz stated the importance of legato by writing,

> Piano-playing which involves so-called "ugly" tone is always piano-playing in which the legato is highly unsatisfactory, in which percussive noises on the key-surfaces are noticeably present, in which the control of intensity is poor, or in which offensive extremes of intensity and pitch appear.[363]

Schultz considered legato to be the most important factor in tone quality differences. He further elaborated:

> Legato must be employed not merely to conform to a set of musical rules, but rather to produce a vital and highly attractive sensuous beauty. It is the absence of this beauty which is so often misconstrued as ugly piano tone.[364]

Schultz acknowledged how percussive noise and note duration influenced tonal beauty. He wrote that

> Naturally, a sound image consisting of both a tonal and a noise element is uglier than an image consisting of the tonal element alone. The shorter the duration of the tone, moreover, the uglier it seems; for when a key is held depressed a longer time, the short-lived noise element disappears and the strings continue to vibrate in tonal purity.[365]

Schultz stressed that prepared key-attacks reduced the percussive noises and improved tone quality. He considered controlled intensity and dynamics within the phrase-line as

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[362] Arnold Schultz. *The Riddle of the Pianist's Finger: And Its Relationship to a Touch-Scheme*. (Chicago, III: The University of Chicago Press, 1936).

[363] Ibid., 196.

[364] Ibid., 197.

[365] Ibid., 199.

important factors for expressiveness, as well as tone quality.[366] Schultz reinforced Ortmann's claim that "the pianist's only control over piano tone is his control over key-speed."[367] Controlling key descent was the acquired technique that could produce the desired tone quality. Schultz stated that "the immediate aim of piano technique is the application of force to the piano key in order to depress it." [368] The understanding of the relationship of generated force to the force of key-resistance, and the interaction of these two forces, comprised the foundation of piano playing technique.[369] Along with controlled key descents, Schultz emphasized the development of beautiful tone quality predominant through the use of small muscles. He stated that "the small muscles provide the sensitiveness to key-resistance upon which such control largely depends."[370] Schultz acknowledged disagreements between pianists and scientists. He supported the experiments conducted upon tone quality by acoustic scientists, as well as their findings. Those scientists concluded that qualitative changes in tone actually occur, but changes in quality could not occur without changes in intensity.[371] He elaborated:

> The literature of modern pedagogy is full of instruction concerning the laws which condition tonal beauty and the key-treatment which produces it. Teachers everywhere are telling their students to *listen* for qualitative differences, the sophisticated concert-goer comments in the lobby during intermission that the recitalist's tone is round, harsh, brittle, satisfying, or dry. …Even the expression marks in piano compositions often indicated particular kind of timbre. Yet, in the face of this sensibility of musician's to differences in tone-quality, a few dissenters have raised small voices of protest from time to time, insisting that not the quality but only the intensity of a piano tone can be altered. The felted hammer, they contend, is never in contact with the strings for more than an exceedingly brief moment, and the only possible difference between one key-

[366] Ibid., 200.
[367] Ibid., 195.
[368] Ibid., 1.
[369] Ibid.
[370] Ibid., 204.
[371] Ibid., 195.

> descent and another is, therefore, the speed with which the hammer strikes the strings.[372]

However, Schultz acknowledged that artists and pianists listened for quality of tone in different way than did scientists:

> Pianists and pedagogues, however, have in the main regarded this argument contemptuously, the burden of their retort being usually that not the mechanically minded, but only the spiritually minded, can be sensitive to the subtleties of changes in tone-quality; that distinguished artists and musicians do hear differences and, their auditory sense organs being presumably more finely attuned, the differences must therefore be real.[373]

Schultz also recognized that psychological reactions, imagination, and wishful hearing could modify perception of the auditory sensations.[374] He elucidated that the nervous system reacted to different sounds in different ways and that it could influence how different sound qualities were heard:

> Again, I followed Ortmann in my book in denying that there can be a difference in the quality of a piano tone independent of its intensity. I have no doubt at all that measured by an objective instrument the upper partials giving the tone its characteristic quality change only as the intensity changes. But today I would say we react to a sound also with our nervous systems, which are quite different affairs from objective instruments, and that different modes of nervous reaction cause us to hear different qualities of sound, and even by empathy the quality of sound that a given performer hears as he produces it.[375]

Among many principles found in his teaching method, Arnold Schultz studied the use of small muscles and the interaction of generated force to the force of key-resistance. Schultz was a notable pedagogical writer who emphasized sensitiveness of small finger muscle in tone-production, and who acknowledged that psychological reaction, imagination, and wishful hearing could affect the quality of sound.

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[372] Ibid., 194-195.
[373] Ibid., 195.
[374] Ibid., 202-203.
[375] Reginald R. Gerig. *Famous Pianists & Their Technique*. (Bloomington: Indiana University Press, 2007), 466.

3.10 WILLIAM S. NEWMAN (1912-2000)

William S. Newman was an American musicologist and pianist. He studied piano at the Cleveland Institute of Music from 1931 to 1933 and composition and music history at Western Reserve University.[376] He studied with Paul Henry Lang and Erich Hertzmann at Columbia University as a postdoctoral student from 1940 to 1941. Newman performed throughout the USA as a solo pianist, with chamber groups and with orchestras. He taught at the University of North Carolina and served as the president of the American Musicological Society from 1969 to 1970. He presented numerous writings on the development of the sonata-allegro principle and performance practice.[377] Newman also wrote the notable book *The Pianist's Problems: a Modern Approach to Efficient Practice and Musicianly Performance* (1950).

Newman emphasized the development of the ability to play by ear. He stated that playing by ear could enhance learning by increasing the perception of notes in groups and of harmonic relationships.[378] A sense of direction could be developed and, therefore, could contribute to a fluent quality of playing. He elucidated that "developing sense of direction did not change the actual tone quality but it did have the psychological effect of calling more attention to tone quality."[379] Newman claimed that to use the word "touch" in relation to the word "tone" was inappropriate. He wrote, "the word *touch*, which is intimately bound up with the word *tone*, is something of a misnomer."[380] Newman

[376] Paula Morgan and Jon Stroop. "William S. Newman," *Grove Music* Online, https://doi-org.pallas2.tcl.sc.edu/10.1093/gmo/9781561592630.article.19821 (accessed March 20, 2018).

[377] Ibid.

[378] William S. Newman. *The Pianist's Problems: A Modern Approach to Efficient Practice and Musicianly Performance*. (New York: Harper & Row, 1974), 6.

[379] Ibid., 119.

[380] Ibid., 117.

dismissed the idea that the way in which the pianist struck the key could affect the timbre. He stated that once the hammer was struck, even for a fraction of a second, the hammer had no further contact with the string. He wrote, "Consequently, one hardly need add that common statements like 'she has a lovely touch', and impressive acts like the effort to produce a vibrato after the key is struck, represent basic misconceptions."[381]

Newman considered the degree of legato playing, the use of the pedals, a sense of direction, the noise element and intensity to be the main factors that influenced the illusion of touch or tone production and the actual quality of tone.[382] Regarding the degree of legato, he believed that "slight extra length may even effect an enrichment of each tone."[383] The use of the pedals related to the degree of legato playing and affected the structure of the tone. A sense of direction related to phrasing, rhythmic grouping, and harmonic inflections. External noise elements in the action and relative intensity influenced tone quality. Newman considered those elements to be the primary factors that affected quality of tone.[384]

William S. Newman emphasized ear training, the mind and the body, as well as their effects on each other during piano playing. His perspective on touch and tone production was that the inner state or mind, legato, sense of direction, pedals, intensity and noise influenced tone quality, but touch did not influence tone quality. His book *The Pianist's Problems* conveyed Newman's pedagogical approach and insight in piano teaching.

[381] Ibid., 118.
[382] Ibid., 119.
[383] Ibid.
[384] Ibid.

3.11 JÓZSEF GÁT (1913-1967)

József Gát was a Hungarian pianist, harpsichordist, editor and pedagogue. He studied at the National Hungarian Royal Academy of Music, as well as at the Franz Liszt Academy with György Kósa and Béla Bártok.[385] Gát taught piano and methodology at the Franz Liszt Academy of Music in Budapest from 1949 until his death in 1967. His students included Claudette Sorel, Lili Kraus, Tamás Vásáry, Ilona Prunyi, and György Kurtág.[386] His book *The Technique of Piano Playing*[387] was originally published in Hungarian in 1953 and English in 1958.[388] He included photographs, physiological diagrams and anatomical diagrams relevant to understanding his concepts. Gát discussed the structure of the human organism and the mechanism of the piano based on the sciences of anatomy, physics, and physiology.[389] He provided the facts found by scientifically proven facts from physicists' experiments and from piano manufacturers' practices. His essential beliefs and perspectives included the following summative points:

1. An essential feature of the mechanism of the piano is the immediate rebounding of the hammer after having touched the string. If this were not true the vibration of the string would be impeded.
2. As the hammer moves freely at the moment of striking the string, the only variable component of this motion is the velocity of the hammer.
3. The tone volume increases in direct proportion to the velocity of the hammer-stroke.
4. The velocity of the hammer at the moment of striking depends solely upon the velocity of the key attained at the escapement levels. Thus, if pianist wants to carry through alterations in the velocity of the hammer (and thus in the tone), he has to change the velocity of the key.
5. The tone colour of the piano depends – apart from the construction of the piano (stringing, material and making of the sound-board, etc.) – mainly on the type of the coating of the hammer and on the quality of the felt.

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[385] Brandon Roger Bascom. "The Legacy of József Gát on Piano Performance and Pedagogy." (DMA diss., The University of Iowa, 2012), 2.
[386] Ibid., 23.
[387] József Gát. *The Technique of Piano Playing*. (London: Collet's, 1980).
[388] Ibid., 17.
[389] Ibid., 9.

6. Higher overtones fade more slowly than lower ones. The sustained tone thus alters, grows thinner.
7. The number of overtones increases in direct proportion to the velocity of the hammer stroke. Within certain limits, alterations of the tone volume therefore bring about changes of the tone colour, too.
8. A forcefully struck note diminishes more rapidly than one struck with less energy.
9. Higher notes fade away sooner than deep ones. For this reason there is no need to have dampers on the upper octaves of the piano.[390]

Gát discussed the piano's tone and tone-coloring possibilities based on scientific facts. He believed that tone color did not depend on the pianist but on the piano's construction, including the strings, the soundboard, the type of hammer coating, and the quality of the felt. [391] He asserted that tone color differences were possible only in direct proportion to changes in tone volume. Moving the key resulted only in either an increase or decrease in hammer velocity, or in an increase or decrease in tone volume. He affirmed that changes in tone volume altered the tone color. Gát also considered noises as to be important elements of tone color. He wrote:

> As noises will always start simultaneously with the musical tones, they must be taken into consideration in the development of the sensation of tone colour because the tone colours are evidently produced by the whole complex of sound impressions affecting us.[392]

Gát classified three groups of noises: noises caused by vibrations of the hammer and string at the moment of the string strike, noises caused by the collision of the wood of the key and the key-bed (lower noise), and noises caused by the collision of the hand and the key (upper noise).[393] He viewed noise as an essential, representative sound characteristic that affected sound quality. He stated that the combination of tones and noises should be

[390] Ibid., 12-13.
[391] Ibid., 14.
[392] Ibid.
[393] Ibid.

based on musical conception. He underscored the pianist's ability to control noise-effects in order to produce a desirable tone quality:

> The apportioning of the lower and upper noises and their mixing with the tone of the string depends upon our will: the amount of them can be varied according to our musical conception. The deep hollow sound of the lower noise is an indispensable requisite of representing a dark, heavy, depressed mood, while the upper noises are needed in sharp, light, fresh sounds. However, their "over-dosing" - unfortunately a most frequent occurrence in concert halls - will spoil the tone quality because the less the noise-effect (compared with tone volume) the more "carrying" and sonorous the tone will be. …Thus the sensation of tone volume aroused in the listener depends not only upon the dynamic degree but also upon the pianist's ability to decrease the noise-effects in comparison with the tone volume. [394]

Gát acknowledged that the pedal contributed to dynamic effect and sound quality changes. He stated, "The right pedal complements the dynamic effect, and in addition it is also a special tone-colouring factor."[395] He advised using the pedal after the tone sounded in order to reduce noise-effects and to create a beautiful tone quality:

> As our aim is to make the tone more beautiful, we must try to reduce the noise-effects to a minimum. For this reason the pedal must, if possible, be pressed down after the sounding of the tone, because then the noise-effects will not be amplified by resonance. This way of employing the pedal also has the advantage of making the tone volume more even, because its natural tendency to be decrease is counteracted by the amplifying effect of the resonances.[396]

Gát objected to associating tone color with touch. He believed that touches closely related to dynamics, agogics and noise-effects. [397] He added, "The more sensitive our dynamic shading and agogic shaping, the more diversified and coloured our playing will be."[398] He differentiated between objective color and subjective color as ways of determining tone color. According to Gát,

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[394] Ibid.
[395] Ibid., 16.
[396] Ibid., 275.
[397] Ibid., 20.
[398] Ibid., 21.

> The tone colour corresponding to the physical determination (i.e. the tone colour measurable in its overtone proportions) will be called *an objective tone colour*, while the tone colour-effects aroused in the individual listener by the interrelation of several tones will be called *subjective tone colour*.[399]

Gát believed that the pianist's imagination and perception of tone color affected the listener's tone color perception. He wrote that

> The pianist plays on the imagination of his listeners. The pianist's way of signaling tone colours arouses more beautiful tone-colour concepts in the listener than the real, objective tone colour of any other instrument, because the flight of fancy always transcends reality.[400]

Gát stated that pianists could create the illusion of altering tone color through dynamic differentiation.[401] He claimed that the dynamic mixture of the chords and the dynamic relationship between tones of sounding simultaneously created an illusion of tone color differences.[402] The musical concept was also emphasized for tone color changes:

> The role of the musical concept in piano playing is even greater than in the case of other instruments, because the player of a string or wind instrument is still able to modify the tone after having sounded it. He may change the pitch or the tone colour, while the pianist has to concentrate entirely on the escapement level. He has no possibility of subsequently modifying the tone: the slightest uncertainty in the musical concept causes irremediable distortions because the sound quality, the subjective and objective tone colour, takes shape at the moment of escapement, i. e. in a hundredth of a second or even in a shorter time.[403]

Regarding movements in piano playing, he emphasized that they should be associated with musical elements as well as in relation to tone:[404]

> When playing the piano, our movements are in the service of tone production. Only that movements will be expedient which serves to make the piano produce a tone adequate to our musical concept. We have to concentrate on tone production and not on setting the key in motion. *Do not play on the keys but – with the aid of the keys – on the strings.*[405]

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[399] Ibid., 15.
[400] Ibid., 21.
[401] Ibid., 18.
[402] Ibid., 17.
[403] Ibid., 78-79.
[404] Ibid., 81.
[405] Ibid., 82.

József Gát recognized that the construction of the instrument, the noise elements, the pianist's imagination and musical concepts as crucial elements of tone quality changes. Gát was a notable pedagogue whose scientific insights influenced his views on piano playing. His method book *The Technique of Piano Playing* a significant twentieth century pedagogical work.

3.12 HEINRICH NEUHAUS (1888-1964)

Heinrich Neuhaus was an eminent Russian pianist and pedagogue. He studied piano with Aleksander Michałowski in Warsaw and with Karl Heinrich Barth and Leopold Godowsky in Berlin. In 1914, he completed his studies at the Meisterschule in Vienna, winning the Staatspreis.[406] Neuhaus was a professor and director of the Moscow Conservatory. Noted students included Emil Gilels, Sviatoslav Richter, Radu Lupu, Yakov Zak, Teodor Gutman, Vera Razumovskaya, Alexei Lubimov, Alexei Nasedkin, Vera Gornostaeva, Vladimir Krainev, Yevgeny Mogilevsky, Eliso Virsaladze, and Elena Richter. Neuhaus wrote the book *The Art of Piano Playing* in 1958, which was revised and republished in 1961.[407] Neuhaus stated that

> Music is a tonal art. It produces no visual image, it does not speak with words or ideas. It speaks only with sounds. Since music is a tonal art, the most important task, the primary duty of any performer is to work on tone.[408]

He added, "Briefly and clearly: mastery of tone is the first and most important task of all the problems of piano technique that the pianist must tackle, for tone is the substance of music; in ennobling and perfecting it we raise music itself to a greater height."[409] He

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[406] Maria Razumovskaya "Neuhaus, Heinrich Felix Gustavovich," *Grove Music* Online, https://doi.org/10.1093/gmo/9781561592630.article.19771 (accessed March 20, 2018).
[407] Ibid.
[408] Heinrich Neuhaus. *The Art of Piano Playing*. (London: Kahn & Averill, 1993), 54.
[409] Ibid., 56.

stressed the importance of having an accurate tonal knowledge of the dynamic range of the piano. He advised probing all possible gradations of tone between the limits of "not yet tone" and "no longer tone."[410] He stated:

> By depressing a key too slowly and softly, I get nothing, zero; it is not yet a tone; if I let my hand fall on the key too fast and with too much force, I get a noise; it is no longer a tone. Between these limits lie all the possible gradations of tone.[411]

Neuhaus emphasized listening to the sound until the tone and the slightest vibration of the strings had completely ceased. He believed that "only those who clearly hear the continuity of the piano tone (the vibration of the strings) with all the changes in volume could recognize all the beauty."[412] Neuhaus stressed that tone and the way to produce tone or technique were inseparable.[413] Technique could not be discussed without an understanding of all the physical movements involved in piano playing:

> To acquire technique which enables you to perform all the existing piano literature, it is essential to use all the anatomical possibilities of movement with which man has been endowed, beginning with the hardly perceptible movement of the last joint of finger, the whole finger, the hand, the forearm, arm and shoulder and even the back, in fact the whole of the upper part of the body, i.e. beginning with one point of support - the fingertips on the keyboard, and ending with another point of support on the chair.[414]

Neuhaus stated that complete freedom and relaxation of the arm and wrist from the shoulders to the tips of the fingers were the conditions for good tone.[415] He stated:

> From the locomotor point of view, "good" tone is always accompanied by fullest flexibility (but by no means weakness), relaxed weightiness (in other words, an arm which is relaxed from the back and shoulder to the fingertips touching the keys, for all accuracy is concentrated in the fingertips!) and a sure, contact in quick, extremely light notes to a tremendous pressure using if necessary the whole body in order to obtain the maximum tone.[416]

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[410] Ibid., 58.
[411] Ibid.
[412] Ibid., 62.
[413] Ibid., 67.
[414] Ibid., 83.
[415] Ibid., 69.
[416] Ibid., 66.

To improve quality of tone, the pianist's ear should be trained, developed and refined. Neuhaus believed that the refined ear could solve many technical difficulties of piano playing. He said that

> All this mechanism is not at all complicated for anyone who can hear well, has a clear purpose, is able to realize the flexibility and freedom of body with which nature has endowed him and knows how to put in a lot of stubborn work on the piano.[417]

He also addressed the importance of producing singing quality of tone on the piano. He wrote that

> Since the basis of all audible music is singing and since piano literature is full of cantabile, the first and main concern of every pianist should be to acquire a deep, full, rich tone capable of any nuance, with all its countless gradations, *vertically* and *horizontally*.[418]

Regarding the pedal, Neuhaus stated that artistic pedaling is inseparable from the tonal image; therefore, the required tonal effect could be obtained with proper pedaling.[419] He wrote that

> Of course it is useful to play a piece without pedal in order to check the accuracy and clarity of each note, but it is more useful still to study a composition with proper pedaling since it is only with its help that the required tonal effect can be obtained.[420]

Neuhaus believed that the pianist's own individual tone quality corresponded to the pianist's psychological, technical and physical make-up.[421] He stated:

> The difference and variety of the tonal picture presented by various great performers is infinite because of the differences in their personalities… The lower the artistic level of the performer, the less the personal, individual element in his

[417] Ibid.
[418] Ibid., 67.
[419] Ibid., 158.
[420] Ibid., 73.
[421] Ibid., 81.

> playing, the more monotonous and similar to that of other, like performers is the tonal picture he produces.[422]

Neuhaus emphasized working on tone, but stressed that tone was only one expressive means available to the pianist.[423] He wrote that

> What a beautiful tone! How wonderful it sounds! etc. But what gives us the impression of a beautiful tone is in actual fact something much greater; it is the expressiveness of the performance, or in other words, the ordering of sound in the process of performing a composition. I am convinced that you could never say of a not very musical performer that his playing sounds wonderful even if he knows hundreds of ways of producing tone and has gone through the whole business of working at tone quality. In the best cases, it will sound good in places, but not throughout. With a really creative artist and pianist "a beautiful tone" is a most complex process combining and ordering the relationship of tones of varying strength, varying duration, etc., etc., into a single entity.[424]

Heinrich Neuhaus contributed profound writing and teaching observations about various aspects of piano playing. He emphasized quality of tone as an important means of expression. He also believed that the importance of a refined ear, flexibility of the entire playing mechanism, the pianist's conception of sound, understanding the musical intent and the proper use of pedaling were indispensable elements to achieving desired the quality of tone. Neuhaus was a prominent pedagogue, and his *The Art of Piano Playing* was an influential book in the twentieth century.

3.13 RUTH SLENCZYNSKA (b. 1925)

Ruth Slenczynska is an American pianist. She studied with Alma Schmidt-Kennedy (a pupil of Leschetizky), Egon Petri, Artur Schnabel, Sergei Rachmaninoff, Alfred Cortot, Marguerite Long, and Nadia Boulanger.[425] Josef Hofmann offered her a

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[422] Ibid., 69.
[423] Ibid., 68.
[424] Ibid.
[425] Allan B. Ho. "Slenczynska, Ruth," *Grove Music* Online, https://doi-org.pallas2.tcl.sc.edu/10.1093/gmo/9781561592630.article.A2293079 (accessed March 20, 2018).

scholarship to the Curtis Institute of Music.[426] Slenczynska taught at Southern Illinois University Edwardsville as an artist-in-residence from 1964 to 2002.[427] She recently presented a recital at the Dunham Auditorium at Southern Illinois University Edwardsville on January 9, 2018.[428] Slenczynska has written numerous articles and a pedagogical work, *Music at your Fingertips* (1961).[429] She believed that the heart, mind, and hands all worked together in a performance.[430] Regarding posture and hand position, she suggested:

> Sit comfortably but straight, shoulders down but not hunched, elbows in, arms hanging level with the keyboard, wrists somewhat higher so that the hands hang slightly when the fingers push down the keys.[431]

She stated that the high wrist position was taught by one of her teachers, a Leschetizky's pupil. She discussed further:

> This suspension of the hand from the wrist causes the tone to be controlled by the weight given to each individual finger when pressing down the key. This weight touch gives us relaxed control in all finger technique and production of tone. Solid, firm fingers are the foundation of a good finger technique; each finger must be well raised and firmly put down so that every key touches the bottom.[432]

Slenczynska differentiated between technique and mechanism. She stated that fingerwork, speed, octaves were mechanism while technique meant complete mastery of the keyboard. She elaborated that the ability to produce beautiful tone and using the proper pedaling were the parts of technique.[433] She emphasized that beautiful sound

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[426] Ibid.
[427] Ibid.
[428] Therese Zoski Dickman. *Southern Illinois University Edwardsville* Online. https://www.siue.edu/lovejoylibrary/musiclistening/special_collections/title/slenczynska/slenczynska.shtml (accessed March 20, 2018).
[429] Ho. "Slenczynska, Ruth."
[430] Ruth Slenczynska, and Ann M. Lingg. *Music at Your Fingertips; Aspects of Pianoforte Technique, Advice for the Artist and Amateur on Playing the Piano*. (New York: Da Capo Press, 1976), 16.
[431] Ibid., 110.
[432] Ibid.
[433] Ibid., 35.

quality must be acquired from the very start. Even in technical exercises sound should be beautiful. She considered the beauty of sound to be a pianistic virtue.[434] She emphasized that "Always a student must be admonished to make technical exercises sound beautiful: to use crescendo and diminuendo, to listen to his sound, to polish his tones, to aim at an even quality."[435] Listening should be meaningful and conscious. She stated:

> First and foremost, I was taught to listen (as distinguished from "hearing") and to learn from all sources with an open, credulous, and investigating mind and with the determination to make a piece "sound right," regardless of the means required to achieve this end.[436]

Slenczynska considered imagination to be an important factor in the production of sound quality. She asserted that imagination could solve any pianistic problem.[437] She added, "We must be able to imagine every tone, every phrase, the whole composition as we wish it to sound," and, "we must be able to project it so that the listener receives precisely the impression we wish to create."[438] She also stated that a variety of touches could be developed through exercises in imagination.[439]

Slenczynska examined the ideal proportions of tempo, dynamics, rhythm, and mood. She believed that an ideal dynamic proportion could lead to controlled tone-color:

> Proportion is the elusive cousin of architecture. It is one of the most difficult, and one of the basic, problems of a pianist. Tempo, rhythm, dynamics, mood - all these elements must have been explored before we can hope to attain the ideal proportion. We can establish the "right" tempo only we realize what would be too fast or too slow. We arrived at controlled tone-colour only if we know what is too loud or too soft. Exaggeration and understatement, constant probing of detail, alone will teach us to project all shades of mood.[440]

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[434] Ibid., 23.
[435] Ibid., 24.
[436] Ibid., 11-12.
[437] Ibid., 54.
[438] Ibid., 16.
[439] Ibid., 24.
[440] Ibid., 27-28.

Ruth Slenczynska was an important piano pedagogue, and her pedagogical work concerned developing mental perception through careful listening and imagination, and projecting ideal sound qualities.

3.14 GEORGE KOCHEVITSKY (1902-1993)

George Kochevitsky studied at the Leningrad and Moscow Conservatories.[441] He was a pedagogue who published studies on the psychological and neurological aspects of piano technique. In his method book, *The Art of Piano Playing* (1967)[442], Kochevitsky stressed the importance of understanding the structure and function of the central nervous system in piano playing and study. In his method book, Kochevitsky discussed the historical development of piano technique, theories, and teaching in three stages. His overview of the historical development of piano teaching provided valuable sources that improved a pianist's understanding of the piano pedagogy's evolution. He discussed the approaches of each historical stage: the finger school, the anatomic-physiological school, and the psycho-technical school. Kochevitsky emphasized the psychology of the human being, especially regarding the structure and function of the central nervous system of the human being and its pertinence to piano playing. According to Kochevitsky, the central nervous system directed and controlled the activity of the playing apparatus.[443] He regarded consciousness and mental conception as significant elements of music practicing. He determined that, "practicing at the piano is mainly practicing of the central nervous system, whether we are aware or not."[444] He also believed that technical

[441] Reginald R. Gerig. *Famous Pianists & Their Technique*. (Bloomington: Indiana University Press, 2007), 465.
[442] George A. Kochevitsky. *The Art of Piano Playing: A Scientific Approach*. (Evanston, Ill: Summy-Birchard Co, 1967).
[443] Ibid., 38.
[444] Ibid., Preface.

insufficiency was usually a symptom of undeveloped musical thinking.[445] Kochevitsky considered touch forms and other physiological aspects of tone-production as secondary to the central nervous system.[446] He wrote, "The problems connected with muscular conditions and outward appearance of our playing apparatus are important, but they are secondary."[447] He emphasized the importance of inner mental conception, stating, "The quality of pianist's tone depends mainly on his mental conception, his inward imagination of the tone which has to be produced."[448] Kochevitsky also addressed the interrelationship between inner mental conception, physical movements, and the actual tone quality:

> Certainly, one must not forget that the ability for inward conception of a tone, of several tones (a meaningful musical sentence) develops in the process of realizing this inner conception. Retrospectively, the actual sonority influences and enriches the inner imagination. The strength and sharpness of the inner conception guides the pianist's playing apparatus in finding its means for realizing this conception. Arm, hand and fingers will obey, adjust and produce exactly what the mind dictates.[449]

Kochevitsky stated that the purpose of pianistic movement was the realization of the acoustic picture.[450] Finding the secret of good tone quality could not be achieved by observing the playing hands of a great pianist. He argued that "visual perception without inner conception is of little help: it can lead to quite wrong conclusions."[451] He emphasized that the pianist must be able to engage in self-listening. He stressed that

> A pianist must learn to hear slightest differences in the quality of his tone, phrasing, dynamic shadings; to notice the slightest rhythmic and technical inaccuracies; to perceive the finest sensations in his playing apparatus.[452]

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[445] Ibid., 45.
[446] Ibid., 38.
[447] Ibid., 18.
[448] Ibid., 38.
[449] Ibid.
[450] Ibid., 50.
[451] Ibid.
[452] Ibid., 51.

The physical condition of pianist's hands and fingers, the quality of a single tone, and the looseness of the wrist were discussed. Kochevitsky claimed that the physical features of the pianist's hands and fingers could not influence the pianist's tone quality. He believed that soft tone was produced by the slowness of the key depression, not the looseness of the wrist.[453] He considered the tone quality of a single note meaningless since music was comprised of coherent successions of notes. Kochevitsky disapproved using terms such as singing, warm, harsh tone and colorful to described tone quality. He believed that those terms disclosed an absence of imagination, and the highest creative level such as metaphoric language, non-verbal symbolism could enrich the imagination.[454] The importance of psychological aspects for projecting performance and musical expression was addressed:

> Real creation does not lie in the realm of reason. The finest gradations in tone volume, in rhythm (agogics), and in other elements of performance are incalculable, and have to be felt as nuances of musical expression. When performance projects a kind of spell over the audience, when the tonal beauty seems ethereal, this is achieved, not by any kind of calculation, but by inspiration.[455]

George Kochevitsky was an important pedagogue who opened a new realm in the study of the development of piano technique based on a scientific foundation including the role of the central nervous system and the neurological control of muscle function.

[453] Ibid., 38.
[454] Ibid., 51.
[455] Ibid., 51.

3.15 GYÖRGY SÁNDOR (1912-2005)

György Sándor was an American pianist of Hungarian birth.[456] He studied piano with Bartók and composition with Kodály at the Liszt Academy of Music in Budapest. He moved to the USA after his Carnegie Hall debut in 1939.[457] He taught at Southern Methodist University and was director of graduate studies in piano at the University of Michigan before he joined the faculty of the Juilliard School in 1982.[458] Sándor published *On Piano Playing: Motion, Sound, and Expression*[459] in 1981. He emphasized the importance of understanding the playing mechanism, writing,

> Technique is a skill that one must develop intelligently, effectively, and without abusing the participating mechanism. Our muscles, joints, nervous system, and breathing mechanism function at their best when we know how to put them to good use.[460]

He stressed coordinated movement in the playing mechanism and affirmed that "We must learn the kind of coordination that enables us to put to use the necessary equipment and to play without any trace of fatigue, no matter how demanding and difficult the passages we must perform."[461] Sándor also stated that "in music, as in any kinetic art, emotions are expressed by motions,"[462] and recognized "certain fundamental ways in which the motions correspond to and reflect the emotions that generate them."[463] He elaborated further:

> …it is the motions used to alter the sound that determine how sound changes, how music develops, and what it expresses. The manner in which a pianist attacks the keyboard, the way the violinist uses his bow arm and fingers, and the way singers

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[456] Ruth B. Hilton. "Sándor, György," *Grove Music* Online, https://doi.org/10.1093/gmo/9781561592630.article.24504 (accessed March 20, 2018).
[457] Ibid.
[458] Ibid.
[459] György Sándor. *On Piano Playing*, (New York: G. Schirmer, 1981).
[460] Ibid., 16-17.
[461] Ibid.
[462] Ibid., xi.
[463] Ibid.

> and wind-instrument players control their breath determine the quality of the tone they produce. Their music is the result of the motions they employ.[464]

He determined that technique was organized motions, and it was those motions that produced sounds. He added that

> The character of the motion must correspond to that of the sound; this is the essence of piano playing. Technique, sound, and motions are indivisible: they affect, influence, and create one another.[465]

Sándor believed that "technique must be based not on the strength and endurance of our muscles but rather on their optimal coordination."[466] A well-coordinated technique could produce beautiful sounds that contained all shadings of human emotions. Sounds, motions, and emotions were interrelated. He stated, "Just as motions and sounds are interrelated, so are motions and emotions. Sounds are the result of motions, and motions must correspond to emotions."[467] Sándor felt that a well-coordinated system of motions was conditioned by both the anatomy of the human body and the nature of the piano.[468] The coordination of the human mechanism was based on physiological factors as well as the force of gravity.[469] He advocated partial relaxation, but he objected to the concept of total relaxation:

> Even when we rely purely on the force of gravity, we must use the necessary muscular equipment to lift and place the arm and hand in their proper positions. Most motions are executed by antagonistic sets of muscles: while one group (for example, the flexors) works, the other group (extensors) relaxes. Partial relaxation alternates with muscular activity at all times; complete relaxation exists only if we lie down and rest.[470]

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[464] Ibid., 3-4.
[465] Ibid., 180.
[466] Ibid., x.
[467] Ibid., 3-4.
[468] Ibid., ix.
[469] Ibid.
[470] Ibid., 7.

Sándor acknowledged tone quality as the most essential artistic ingredient,[471] and believed that "every artist has a touch and timbre that we recognize as his own."[472] He believed that pianists could modify dynamic levels and tone quality by altering the speed of the hammer.[473] He acknowledged controversy over tone color, and affirmed that tone quality did, in fact, exist:

> It has been "proven" by some "experts" that it is only the volume of the sound that can be altered and that altering tone quality is purely a matter of imagination. This may be true in playing one single note, but a series of sound in sequence is quite another matter: touch and tone quality are most personal things, and they are clearly recognizable. Even if they are hard to define, the difference in tone qualities among certain artists undoubtedly exists and is not imagined. Perhaps it is caused by the rate of acceleration of the speed of the hammers; perhaps it is the way the damper stops the sound when it descends on the strings; perhaps it is the spacing of notes, the agogic qualities of the playing, or the flexibilities of metric units – these and many other factors may influence tone quality. But differences do exist![474]

He wrote that the stiffness of muscles and joints, as well as resilient and firm joints, affected the quality of the sound. He wrote, "Stiff muscles and joints cause a hard sound, while excessively soft ones produce a pale, anemic sound."[475] The importance of resilient joints for singing tone was stated:

> The playing mechanism… the joints of the fingers, wrist, and hand must be supple, resilient, and elastic. They should cushion the descending energy in order to eliminate sudden impacts, and they should reduce the speed with which the fingertip contacts the key. If all the joints (including the joints between the phalanges of the fingers) are resilient, a singing one will result.[476]

However, he elucidated that joints must be resilient and firm. The degree of joints' fixation influenced the quality of the sound:

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[471] Ibid., 8.
[472] Ibid., 9.
[473] Ibid., 14.
[474] Ibid.
[475] Ibid., 8.
[476] Ibid., 180.

> The quality of the sound –its fullness, harshness, or weakness –depends on the degree to which the joints have been fixed. If they are loose, hardly any sound will come through; if they are rigid and stiff, we get a harsh, martellato sound. The joints must be resilient and firm, and they should be fixed only at the instant the finger depresses the key.[477]

He reinforced that the relationship between the playing apparatus and the technique and that the tone quality of the piano influenced the sound production:

> If we want a round, sonorous sound, we must activate a well-cushioned elastic human mechanism. We must not force this mechanism on the piano, but throw it or drop it with a responsive springy action in the wrist and the other joints. Under any circumstances the sound reflects both the quality of the playing equipment and the technique utilized, as well as the tone quality of the piano.[478]

He addressed the importance of grouping in piano playing. He elaborated that grouping applied to many areas of piano playing. Grouping included legato playing, phrasing, and the execution of groups of motions.[479] Grouping affected the position of the hand, wrist, fore-arm, and upper-arm. Sándor wrote that

> It is an extremely meaningful activity for pianists, since the piano, essentially, is a percussion instrument and notes tend to sound isolated from one another. The grouping of notes is vitally important, both musically and technically.[480]

He asserted that "a real legato, a real grouping of notes, can be accomplished only by a unifying motion of the arm."[481] Sándor recognized the essential role of the damper in legato playing and its fading and blending effect, and emphasized the importance of attaining the technique of gradually abandoning the key. He suggested a slightly raised arm motion to slow key ascent, which would lead to gentle ending of the sound.[482] He

[477] Ibid., 42.
[478] Ibid., 179-180.
[479] Ibid., 66.
[480] Ibid.
[481] Ibid., 67.
[482] Ibid., 69.

believed that "by this gradual fading away of the previous note one creates not an illusionary but a true legato."[483]

The important role of pedal was described as to "enhance sonorities and help to produce sound effect."[484] Sándor stated:

> When the pedal is depressed with a note or chord, sympathetic vibrations are generated in all the strings of the piano. (Sympathetic vibrations are produced by vibrations in neighboring bodies of the same wavelength.) …When several notes or chords are played, the sympathetic vibrations are even richer; they prolong the sound and add to it an aura of many more harmonics.[485]

He regarded the pedal was a very effective device in creating clear sonorities and mixed or blended, sonorities.[486] He acknowledged the importance of careful listening as well as a pianist's judgment in timing for using the pedal. The timing of using the pedal affected the purity of the sound. He stated:

> It is preferable to capture the sound *after* the hammer hits the strings and the dampers are raised. In this way we can prolong the pure sound and exclude the noise of the hammer, the keybed, and the damper. Minimal as they may be, these noises influence the purity of the sound.[487]

Sándor suggested specific pedaling techniques in the creation of desirable sound qualities. He stated:

> For instance, if we play the bass note softly and the middle register more loudly in a passage of mixed harmonies, we will produce a muddy and generally unpleasant effect. But if we gently accent the bass, underplay the middle register, and bring out the top notes, the blend of chords can be beautiful.[488]

[483] Ibid.
[484] Ibid., 162.
[485] Ibid.
[486] Ibid., 161.
[487] Ibid., 164.
[488] Ibid., 167.

Regarding the soft pedal, he pointed out that "there might be some difference in volume and in the tone quality because a softer portion of the felt contacts the string when the left pedal is depressed."[489] He elaborated further:

> When the left pedal is depressed and the piano mechanism shifts, a less-used portion of the felt contacts the strings and this alters the *tone quality*. Although the purpose of this pedal is not a change in tone quality, everyone now associates the left pedal with both a reduced sound and a new timbre.[490]

Sándor also reinforced the importance of listening when using the pedal. He said, "I must emphasize that the manner, frequency, quantity, and intensity of pedal work must be guided primarily by the ear: constant listening, awareness, and control are needed to produce the desired sounds."[491]

György Sándor's views on piano technique were not limited to physiological understanding, and he emphasized coordinated motions in the playing mechanism, the use of resilient joints, and constant listening in order to produce a desirable tone quality.

3.16 SEYMOUR FINK (b. 1929)

Seymour Fink was a professor at Yale University and at the University of New York at Binghamton.[492] A pianist and pedagogue with more than 35 years of teaching experience, Fink wrote *Mastering Piano Technique* in 1992. In this work, Fink expressed his indebtedness to the works of Otto Ortmann, Arnold Schultz, Paul Pichier and Martin Krause.[493] *Mastering Piano Technique* was written based on his observations of and experiences with piano playing. Fink acknowledged the importance of practicing with

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[489] Ibid., 176.
[490] Ibid., 177.
[491] Ibid., 178.
[492] Seymour Fink. *Mastering Piano Techinique: A Guide for Students, Teachers, and Performers*. (Portland, Oregon: Amadeus Press, 1992), 9.
[493] Ibid.

both the mind and body, but mainly discussed the physical movements of piano playing and the development of pianistic movements, including the parts of the playing apparatus. Exercises and illustrations of movements were included. Fink stressed the movement mechanics of the pianist's body: position, functions, sensations, and the movements.[494] Fink claimed that piano playing movements in the larger parts of the body should be recognized and mastered before those in smaller parts of the body, progressively from the shoulder movement to the arms, hands, and finger movements. He emphasized the development of a keen sense of physical self-awareness. The pianist should learn to play with minimal tension, to carefully analyze, and to systematically master the core movements of piano playing to achieve those goals.[495] Even so, Fink considered piano technique to be more than the physical ability to play with accuracy, but to be the key to musical expression and the vehicle for interpretation.[496]

Movements of releasing on the key and legato playing were considered as an important factor influence tone quality. Fink discussed the degree to which legato affected to the quality of piano sound. He stated that

> Few skills contribute to the quality of piano sound more than a pianist's ability to vary and manage the degree of connection between tones. The ability to perform a consciously controlled, overlapping finger legato enables pianists to enrich their sound in ways that are more subtle than the use of the pedal alone.[497]

Fink also claimed that the manner in which the pianist physically released the keys influenced the sound quality.[498] He stated that the various strokes related to the desired

[494] Ibid., 13.
[495] Ibid.
[496] Ibid., 11.
[497] Ibid., 126.
[498] Ibid., 171.

musical effect and that the various ways of lifting the finger had equal effects on tonal variety. He elaborated:

> The ability to control the timing and speed of finger releases vastly increases your potential for tonal variety. …For example, they often overlap fingers (finger pedaling) as a subtle means of enriching the sonority. At other times they deliberately lighten the sonority to let air between even quickly moving sounds. This is accomplished with close, snapping fingers backed by quiet, gently scooping hands with high wrists; the resulting sonority is softer, quicker, and more sensitive than that possible with bouncing hands.[499]

In his notable work, *Mastering Piano Technique*, Seymour Fink greatly concerned physical movements involved in piano playing. He acknowledged that various touches, the speed and timing of finger release, the degree of connection between notes, and pedaling affected the sound quality.

3.17 BORIS BERMAN (b. 1948)

Boris Berman is an American pianist and Russian heritage teacher. He studied at the Moscow Conservatory with Lev Oborin from 1965 to 1971.[500] In 1973, Berman emigrated to Israel and taught at Tel-Aviv University. After moving back to the United States in 1979, he has served as faculty at various universities. He was head of piano at Yale University from 1984 to 1997. As of this study's release, Berman continues to perform and to teach in many countries. He published his book, *Notes from the Pianist's Bench*, in 2000.[501] It was written based on his teaching experiences and his active piano performance career. In *Notes from the Pianist's Bench*, Berman emphasized both practical and ideal aspects of the art of playing piano. He expressed that "Technical work

[499] Ibid., 173.

[500] David Fanning. "Berman, Boris," *Grove Music* Online, https://doi.org.pallas2.tcl.sc.edu/10.1093/gmo/9781561592630.article.43551 (accessed June 12, 2018).

[501] Boris Berman. *Notes From the Pianist's Bench*. (Yale University Press: New Haven and London, 2000).

should always have a musical goal in sight, and lofty ideas need to be supported by know-how to be put into practice."[502] Mastering piano technique allowed the pianist to realize the various sonorities that could be produced with the piano. Berman stated that "Sound production should be considered part of technique in a broader sense, for technique is much more than the ability to play notes rapidly and evenly."[503] He discussed several aspects required to attain a beautiful sound quality. First, Berman drew attention to the importance of refining the ear in order to refine touch:

> I am referring to two kinds of "musical ears." One is the "subjective ear," the pianist's image of the kind of sound he would like to produce. The more specific the image, the better the results will be. The other is the "objective ear," which refers to the musician's ability to monitor the sound that actually comes from under his fingers. Objective listening is a perennial goal, a life-long battle, for a musician always tries to listen objectively to his own playing but never fully succeeds. The pianist cannot do meaningful work without learning to listen intently and tirelessly to every sound he produces on the piano.[504]

Second, he stressed the importance of the inherent quality of instrument. He stated that "Often overlooked is the need to work on an instrument that responds sufficiently to the nuances of touch."[505] Third, Berman objected to the notion of absolute beauty in sound that could be applied to every piece, performance, and style. The particular style, piece, passage, composer or musical period should be thoughtfully considered in order to attain the appropriate sound quality. He stated that

> In fact, sound can and should be used as a tool of stylistic definition. Stylistic awareness, expressed in the choice of tempo, rhythm, phrasing, and articulation that the performer considers appropriate to the style of a work, should incorporate the notion of a proper sound.[506]

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[502] Ibid., x.
[503] Ibid., 3.
[504] Ibid., 3-4.
[505] Ibid., 4.
[506] Ibid.

Lastly, Berman addressed the controversial matter of a single note and its sound quality. Berman also asserted that a single note and its sound could not be meaningful. He stated further:

> Only a well-trained pianist can produce a second sound to perfectly match the qualities of the first. It is crucial for pianists to have the ability to sustain a certain type of sound for the length of a passage or a phrase and to change it at will.[507]

A singing quality of sound was discussed in relation to listening. Berman believed that, for pianists, beautiful sound usually referred to a singing quality of sound. With the piano's inherent percussive quality, attaining a singing quality was not an easy task for the pianist.[508] He emphasized that achieving that singing quality in a musical phrase required "listening in between notes and listening through the note."[509]

According to Berman, the physical actions that influenced sound production were weight, mass, speed, the perception of depth, and the shape of the finger. Regarding weight, he wrote:

> The more weight that is applied to the key, the fuller (and/or louder) the sound. The pianist needs to be able to use the full weight of his fingers, hand, forearm, and upper arm. Equally important is knowing how not to use weight when a lighter sonority is required.[510]

The number of body parts that participated in sound production also influence sound:

> This variable [mass] concerns how much of the body is involved in sound production. The sound can be produced with the finger alone, or with the finger supported by the hand, or with finger supported by the hand plus the forearm, or with the finger supported by the hand plus the forearm plus the upper arm. The bigger the participating joint – that is, the greater the mass – the fuller the sound.[511]

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[507] Ibid.
[508] Ibid., 4-5.
[509] Ibid., 20.
[510] Ibid., 10.
[511] Ibid., 11.

Speed contributed to changes in volume and had a close relationship to the use of weight and the mass:

> Speed not only can compensate for insufficient weight, it can also be interchangeable with mass. A similar dynamic level can be achieved by using a larger joint with lesser speed, or a smaller joint with greater speed. The decision regarding the course of action to take depends on the pianist's feeling of the sound that is best suited or most appropriate stylistically for a particular piece of music.[512]

The pianist's awareness of the depth of the key influenced touch and sound. That awareness depended on the pianist's ability of imagination. He wrote, "the depth of the key has very little leeway per se. yet every properly trained pianist is able to hear the difference between deep and shallow touch. One usually plays deep into the key to achieve a singing tone."[513] He elaborated that the depth of touch should remain constant for the entire duration of the phrase or passage.[514] Failing to obtain consistent touch resulted in poor sound control. He wrote that the shape of the finger influenced sound, as well:

> The difference in sound is made by touching the key with either the fleshier part of the finger or with the tip. To play music that requires clarity of articulation, the pianist often curves his fingers so that the smallest joint is almost perpendicular to the keys. On the other hand, efforts to create a singing sound of great warmth will succeed if the fingers assume a flatter position, shaping the phrase as if molding warm clay. To avoid muscular tension, fingers should never be outstretched more than is natural.[515]

Berman considered that the sensitivity of the fingertips to be supremely important and wrote that the pianist should "be alert and active even in the softest and most delicate passage."[516] Regarding position of the pianist's hands and posture at the piano, he

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[512] Ibid., 12.
[513] Ibid.
[514] Ibid.
[515] Ibid., 13.
[516] Ibid.

advocated that the seating position be determined by the position of the elbows. The pianist's elbows should not be below the level of the keyboard,[517] and, therefore, the wrist should be level from the elbow to the knuckles.[518] Berman also stressed the important role of a flexible wrist for producing desirable quality of tone. He wrote:

> Forcing the muscles to work in spite of fatigue is the main cause of hand, forearm, and shoulder aches. It is often crucial to distribute the work among different muscles. Small, shock-absorbing motions of the wrist or elbow may be very helpful in relieving the tension.[519]

Berman disapproved of complete relaxation in piano playing:

> …I believe that achieving a state of sustained relaxation is both impossible and unnecessary. The pianist approaches the piano not to relax but to perform a certain task involving significant physical work. I cannot conceive of physical work being done without physical effort. The pianist's effort will have absolutely no harmful consequences if it does not last too long and is followed by a moment of relaxation, however brief.[520]

He regarded controlling the end of the sound as another way to influence sound quality. He wrote, "Nevertheless, the ability to exercise control over the end of the sound adds an uncommon crispness and precision to the touch of the pianist. It also provides an additional way of creating different sonorities."[521]

Regarding pedaling, Berman stated that various musical effects could be achieved by its use. He asserted that the pedal contributed to sound variety: "the greatest contribution of the pedal to piano playing lies in how its use can enrich the sound of the instrument by freeing overtones. Lifting the dampers allows for sympathetic vibrations of all the strings, adding resonance to the sonority."[522] Using the pedal was the only way to

[517] Ibid., 30.
[518] Ibid.
[519] Ibid., 52.
[520] Ibid., 51.
[521] Ibid., 56-57.
[522] Ibid., 97.

release the sympathetic vibration of strings in the modern piano. He advocated a refined use of the pedal:

> (Knock on the side of a harpsichord or clavichord. The instrument will respond with a light rumble. Do the same with a piano; all you hear is a dry knocking sound. The rumble will occur only if you first depress the pedal, thus allowing for the sympathetic vibrations of strings.) This is why the pianist who is interested in producing an acoustically rich sound (that is, rich overtones) must delicate resort to help from the pedal. For this reason I advocate an abundant, though delicate and often discreet, use of the pedal.[523]

Furthermore, Berman advised using the pedal even when playing music from early periods. He wrote:

> But though the harpsichord and clavichord do not have a pedal device, they are built allow a constant halo of overtones to surround each sound. The sound of piano without pedal is by comparison much poorer. People who avoid the pedal to make the piano sound more like a harpsichord are actually achieving the opposite effect.[524]

Berman suggested employing shallow pedaling with frequent changes in polyphonic music for sonorous quality without sacrificing clarity.[525] Touch and listening played essential roles in appropriate pedal technique. Berman stated "if the pianist wants to refine his pedaling, he must first refine his ear."[526] He firmly believed that good pedaling emerged from the combination of a discriminating ear and a sensitive touch.[527] Berman stressed that the pianist's use of the pedal did not rely on the specific actions of the foot but on the pianist's mental sound image. The pianist should be able to adjust the use of the pedal for each performance.[528] Therefore, it would be unwise for the pianist to memorize pedaling in relation to specific pedal effects. He emphasized that, "The

[523] Ibid.
[524] Ibid., 98.
[525] Ibid.
[526] Ibid., 111.
[527] Ibid., 98.
[528] Ibid., 105.

pianist's attentive ear continuously analyzes the sound being produced and serves as a guide in his using the pedal."[529] He acknowledged that the changes in sound are created by depressing the soft pedal, stating that use of the left pedal contributed to the impression of a less percussive sound because it caused the hammer to strike two strings instead of three.[530] He also noted that "Too often the left pedal is used merely as a mute, when its main purpose should be to add a special color to the sonority."[531]

In his book, Boris Berman thoroughly investigated on many aspects of playing, including the refined ear, the inherent quality of the instrument, perception of key depth, wrist flexibility, legato, controlling the end of sound, touch and pedaling. *Notes from the Pianist's Bench* not only represented Boris Berman's insights but denoted pedagogical principles of the twentieth century.

3.18 CONCLUSION

Various perspectives were presented in the twentieth century. Each pedagogue's teaching treatise revealed varied opinions. The aspects discussed by pedagogues were touch, attack and release, noise elements, intensity, dynamic shading, legato, singing quality, inherent quality of piano, mechanism of piano, pedal, physical and physiological aspects, critical listening, psychological aspects, and mental perception. Some aspects were contradicted among pedagogues such as complete relaxation, finger dexterity, physical feature of pianist, key release and touch.

Matthay and Breithaupt contributed to the development of playing technique. They believed that complete freedom and relaxation of the arm with using weight

[529] Ibid., 98.
[530] Ibid., 108.
[531] Ibid., 109.

affected desirable tone quality. On the other hand, Ortmann and Berman disapproved of complete relaxation. They argued that mild fixation exists in all piano playing. Lhevinne believed that the nature of the player's hand affected touch and tone, but Kochevitsky believed that physical features of the pianist's hands and fingers did not influence tone. The manner of key release was stressed by many pedagogues such as Lhevinne, Sandor, Fink and Berman. However, Ortmann stated that timing of key release affected tone quality but not the manner of key-release. The relation of various key touches to tone-production were discussed by numerous pedagogues. Leimer, Gieseking, Cortot, and Fink believed that various touches related to the desired musical effect. Breithaupt emphasized weight produced touch, Schultz and Cortot stressed the prepared touch. Ortmann believed that all touch differences are quantitative differences and only percussive and non-percussive touches represented qualitative differences.

Pedagogical thoughts on tone quality in the twentieth century were examined. Variant opinions on what constitutes a beautiful and desirable tone, and how it is produced on the piano, are invaluable resources for piano teachers and pianists.

CHAPTER 4

SUMMARY AND CONCLUSION

In this study, piano pedagogues' thoughts and attitudes on the production of tone quality on the piano were examined through their pedagogical writings and treatises. In some cases, pedagogues have not written methods books or treatises but their insights were handed down by their pupils in the form of oral traditions. Early teaching methods were exclusively devoted to developing technique as a means to achieve musical expressiveness and beautiful playing. Thoughts on tone quality evolved with the changes and development of each period of time, and various aspects were discussed with distinct perspectives of many pedagogues.

4.1 TOUCH, ATTACK AND RELEASE

Piano pedagogues believed that tone quality could be controlled by the manner of touching the piano keys. Numerous pedagogues throughout the history of piano pedagogy have addressed the relation of various key touches to tone-production. In the early teaching methods, piano pedagogues addressed the production of a desirable tone quality through finger attack and economy of movement while the upper arm remained motionless. Clementi advocated a fixed wrist and prohibited unnecessary motion.[532] Lebert and Stark suggested a closed position with fixed upper-arm, shoulder, and elbow.[533]

[532] Clementi. *Introduction to the Art of Playing*, 14-15.
[533] Lebert and Stark. xxiv.

Czerny stressed the importance of attaining a firmness of touch with a motionless hand and arm position for producing an adequate quality of sound.[534] Adolf Kullak wrote "The tone produced by touch must possess a well-defined quality, and from various individuality of the hands deviations in position will result."[535] Breithaupt defined an essential condition of touch as the physical ability to strike the key in such a way as to produce an ideal tone.[536] Lebert and Stark considered that technique is the ability to produce a beautiful, rich tone, and correct touch is the foundation of technique.[537] Leimer and Gieseking stressed that obtaining a various style of touch as an important means of producing beautiful tone quality. Mason defined touch as "the art of eliciting tone from the pianoforte."[538] Matthay recognized that quality-differences are achievable by the act of touch[539] and stated that all possible touch varieties give all options of tone-quantity and quality, and varying opportunities for agility.[540]

The distance that a key may be depressed, or key depth, was considered as an important factor related to tone-production. Whiteside stressed that awareness of the sensation of the distance to the key-bed could lead to effective use of power.[541] Boris Berman also stated that to awareness of the depth of the key influenced touch and sound. He believed that the pianist's perception of key depth could lead to hearing the difference between a deep and shallow touch. Berman stated that "a singing tone can be achieved by playing deep into the key."[542] As the various descending touches were related to the

[534] Ibid, 1.
[535] A.Kullak. *The Aesthetics of Pianoforte-Playing*, 101.
[536] Breithaupt. *Natural Piano-Technic*, 68.
[537] Lebert and Stark. *Theoretical and Practical Piano-School*, xiv.
[538] Mason. *Touch and Technic*, 5.
[539] Matthay. *The Visible and the Invisible*, 136.
[540] Matthay. *The Act of Touch*, 239.
[541] Whiteside. *The Pianist's Mechanism*, 21.
[542] Berman. *Notes From the Pianist's Bench*, 12.

desired musical effect, the manner of key release equally affected the sound quality. Seymour Fink recognized that the manner of physical key release influenced sound quality. He emphasized that the ability to control the timing and speed of finger releases produced tonal variety.[543] Lhevinne stated that a "sound bump" at the end of the tone is offensive, and suggested employing gradually raised wrist.[544] Sándor advised a slightly raised arm motion for slow key ascent, which would lead to gentle ending of the sound.[545]

On the other hand, Otto Ortmann, Arnold Schultz, Josef Gát, and William S. Newman denied that tone quality differences emanated from the pianist's touch. Ortmann investigated various touch forms and their relationships to tone. He asserted that differences in touch involve differences in speed of key-descent and affect the vibration of the string.[546] He argued that only percussive and non-percussive touches represented qualitative differences in key-movement, but all other touch classification represented quantitative differences in key-speed.[547] Gát objected to associating tone color with touch. He believed that touch was inseparable from dynamics, agogics and noise-effects.[548] Newman pointed out that pianist cannot control tone quality with touch; "once the hammer strikes for a fraction of a second it simply has no further contact with the string."[549] Therefore, the style of striking the key did not affect the timbre that results, and using the word "touch" in relation to the word "tone" was inappropriate.

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[543] Fink. *Mastering Piano Techinique*, 173.
[544] Lhevinne. *Basic Principles*, 23.
[545] Sándor. *On Piano Playing*, 69.
[546] Ortmann. *The Physical Basis of Piano Touch and Tone*, 34.
[547] Ibid.
[548] Gát. *The Technique of Piano Playing*, 20.
[549] Newman. *The Pianist's Problems*, 66-67.

4.2 NOISE ELEMENTS

Pedagogues recognized that noise was the element that should be eliminated in the early teaching methods. Czerny warned against a percussive thumping noise when approaching the keys.[550] Lebert and Stark also stated that all wooden sounds and noise of the mechanism of the instrument should be avoided for a beautiful tone.[551] Noise elements were investigated thoroughly based on scientific experiments at the end of the nineteenth century, and scientists and pedagogues started to perceived that noise elements were important factor and were closely related to sound production and touch. Gát considered noise as a requisite element that represented the instrument's characteristic sound and affected its sound quality.[552] Whiteside acknowledged that the amount of percussive noise was a factor in determining tone quality. She determined that awareness of the distance to the key-bed would minimize the noise.[553] Schultz asserted that duration of notes and percussive noise influenced tonal beauty.[554] He alleged that "when a key is held depressed a longer time, the short-lived noise element disappears and the strings continue to vibrate in tonal purity."[555] Otto Ortmann investigated the importance of noise elements in tone quality. He affirmed that tone quality differences are combinations of tone and noise with intensity and duration differences.[556] Ortmann stressed that the dynamic degree of noise influenced tone color; therefore, an unsatisfactory quality of tone was the result of an unaesthetic ratio of noise to tone.[557] Ortmann believed that noise

[550] Czerny. *Letters to a Young Lady*, 12.
[551] Lebert and Stark. xiv.
[552] Gát. 14.
[553] Whiteside. *Indispensables of Piano Playing*, 18-19.
[554] Schultz. 199.
[555] Ibid.
[556] Ortmann. *The Physiological Mechanics*, 354.
[557] Ibid., 151.

elements could not be controlled by the pianist except the impact of the finger on the key in the manner of percussive and non-percussive approaches.[558] He alleged that "one of the reasons for the adoption and rejection of certain forms of touch was for the elimination or reduction of the noise element."[559]

4.3 INTENSITY AND DYNAMIC SHADING

Piano pedagogues believed that qualitative changes in tone or musical expression were achieved through various dynamic shadings and intensity because of the piano's capability of producing a variety of dynamic levels. Türk stipulated that the beautiful tone in all the shadings of *forte* and *piano* remain clear and bright.[560] He listed the suitable degrees of loudness and softness of tone, and he believed that those degrees were indispensable aspects of expression.[561] Czerny stressed that various dynamic levels produced distinct effects. Like Türk, Czerny described the character of each dynamic level from *pianissimo* to *fortissimo*.[562] Breithaupt stated that the degree of dynamic intensity was closely related to all tonal effects. He wrote that "Hence every "stroke" and every *tonal effect are dynamic products*: all tonal effect corresponds to a certain degree of dynamic intensity."[563] Ortmann also claimed that tone quality differences were due to differences in intensity.[564] Similarly, Schultz stressed that "qualitative changes in tone actually occur, but that these changes are concomitant with variations in intensity. That is to say, each gradation in the intensity of a given tone possesses its own inalterable

[558] Ortmann. *The Physical Basis,* 150.
[559] Ibid., 159.
[560] Türk. *School of Clavier Playing*, 354.
[561] Ibid., 338.
[562] Czerny. *Complete Theoretical and Practical Piano Forte School*, 5.
[563] Rudolph Breithaupt. *Natural Piano-Technic*, 65.
[564] Ortmann. *The Physiological Mechanics,* 354.

quality. There cannot be a change in quality with a change in intensity, and vice versa."[565] Sándor believed that pianists could modify dynamic level and tone quality by altering the speed of the hammer.[566] Gát also affirmed that changes in tone volume altered tone color. He stated that moving the key could result only in an increase or decrease in the velocity of the hammer, or in an increase or decrease of the tone volume.

4.4 INHERENT QUALITY AND MECHANISM OF THE PIANO

The inherent tone quality of a piano depends on the nature and tension of the strings, the sound-board, the felt of hammers and the mechanism, the whole structure of the metal frame and the wooden case of the instrument.[567] Gát believed that a piano's tone quality depended on its construction, the material of the sound-board, the construction of the sound-board, the type of the coating on the hammer and the quality of the felt.[568] Boris Berman also acknowledged that instrument quality was an essential aspect in attaining a beautiful sound,[569] writing, "Often overlooked is the need to work on an instrument that responds sufficiently to the nuances of touch."[570] However, Leschetizky focused more on the pianist's ability to produce a beautiful tone quality based on touch and not on the instrument's quality. He wrote, "A good pianist should be able to make any passable instrument sound well, for his knowledge will be so accurate that he can calculate to a very fine point how much he must allow for the difference and quality of touch."[571] Understanding the mechanism of the piano is indispensable to

[565] Schultz. *The Riddle of the Pianist's Finger*, 195.
[566] Sándor. *On Piano Playing*, 14.
[567] Sumner. *The Pianoforte*, 68.
[568] Gát. *The Technique of Piano Playing*, 12-13.
[569] Berman. *Notes From the Pianist's Bench*, 4.
[570] Ibid.
[571] Hullah. *Theodor Leschetizky*, 37.

produce desired sound quality. The mechanical action of the piano could be briefly explained as:

> When a key is depressed, it causes a small, felt-covered hammer to be thrown against a set of strings tuned to a specific note of the scale. The key incorporates an escapement mechanism which detaches the hammer from the key just before striking the strings so that they receive a single, unimpeded blow from the hammer. The exchange of momentum causes the strings to vibrate, and it is these vibrations which are the origin of the musical sound. The strings do not radiate sound directly, however, because they are much too small to interact with the surrounding air. Instead, they are coupled to a soundboard, a lightweight plate of wood, which is specifically designed to vibrate in sympathy with the strings. It is the structural vibrations of the soundboard which induce pressure changes in the air, rather in the manner of a loudspeaker cone, to create the sound we hear.[572]

Matthay stated "the piano key is a leverage system, a machine, to enable you to get speed with the string, and to ensure dynamic control – of the exact speed (or tone) desired."[573] Matthay stressed that "we must learn thoroughly to understand what is the nature of the particular treatment the key demands for each and every sound-kind, and shading; since it is alone through such difference in treatment that each difference in tone can be induced."[574]

4.5 PEDAL

Pedal could be one of the most distinct factors which influence the sound quantity and quality. Piano pedagogues acknowledged the different degrees to which a pedal influences sound quality. They perceived the importance of careful listening and the pianist's individual judgment in timing for using pedal. Sándor regarded pedal as an essential device that created clear sonorities or will mix and blend sonorities:[575]

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[572] Rowland, David. *The Cambridge Companion to the Piano*. (Cambridge; New York: Cambridge University Press, 1998), 96.
[573] Matthay. *The Visible and Invisible*, 6.
[574] Matthay. *The Act of Touch*, 23.
[575] Sándor. *On Piano Playing*, 161.

> When the pedal is depressed with a note or chord, sympathetic vibrations are generated in all the strings of the piano. (Sympathetic vibrations are produced by vibrations in neighboring bodies of the same wavelength.) …When several notes or chords are played, the sympathetic vibrations are even richer; they prolong the sound and add to it an aura of many more harmonics.[576]

Leimer and Gieseking suggested three different ways to treat the pedal: using it in the building of sound, using it to combine notes and chords that could not be played simultaneously with the fingers alone, and using it in the attainment of aesthetic tonal effects.[577] They also addressed the different character of sound produced when using the damper pedal by saying, "It is logical that a piece which is rendered with pedal will possess a different character of sound than the same piece which is performed without pedal; thus it means that the versatile artist will have to make the most of this difference."[578] Berman further underscored that point, writing, "if the pianist wants to refine his pedaling, he must first refine his ear."[579] Berman reinforced that using the pedal was the only way to release the sympathetic vibration of strings and enrich the modern piano's sound by freeing overtones. He advocated an abundant, but delicate, discreet use of the pedal when performing polyphonic music. He suggested using shallow pedaling in combination with frequent changes to create a sonorous quality without sacrificing clarity.[580] According to Berman, the pianist's use of the pedal should vary in response to different acoustical conditions. Therefore, memorizing pedaling to create certain effects would be impractical.[581] Gát acknowledged dynamic and sound quality differences by employing pedal use. He stated that pedal use was a characteristic of each individual

[576] Ibid., 162.
[577] Leimer and Gieseking. *Piano Technique*, 126-127.
[578] Ibid., 138.
[579] Berman. *Notes From the Pianist's Bench*, 111.
[580] Ibid.
[581] Ibid., 104-105.

pianist, and that pedaling contributed to tone color. Gát also advised using the accurate pedal after the sounding the tone in order to reduce noise-effects and to create a beautiful tone quality.[582] Lhevinne recognized the atmospheric effects of the pedal and stated "there is no hard and fast rule, each phrase is a law unto itself."[583] Neuhaus stressed that questions of artistic pedaling were inseparable from questions of the tonal image. Proper pedaling could not be separated from tone quality.[584]

Regarding soft pedal, Sándor pointed out that "there might be some difference in volume and in the tone quality because a softer portion of the felt contacts the string when the left pedal is depressed."[585] He elaborated that "when the left pedal is depressed and the piano mechanism shifts, a less-used portion of the felt contacts the strings and this alters the *tone quality*. Although the purpose of this pedal is not a change in tone quality, everyone now associates the left pedal with both a reduced sound and a new timbre."[586] Berman also acknowledged that by depressing the soft pedal, the pianist could create the impression of producing a less percussive sound and of adding a special color to the sonority.[587]

4.6 PHYSICAL AND PHYSIOLOGICAL ASPECT

The technique required for early keyboard instruments focused primarily on finger attack and on economy of movement while the upper arm remained still. Czerny stressed agility of fingerwork and a firmness of touch to produce adequate quality of sound while playing. Lebert and Stark also emphasized the strength and independence of

[582] Ibid., 275.
[583] Lhevinne. *Basic Principles*, 47.
[584] Neuhaus. *The Art of Piano Playing*, 158.
[585] Sándor, *On Piano Playing*, 176.
[586] Ibid., 177.
[587] Berman. *Notes From the Pianist's Bench*, 109.

all fingers to enhance sound quality.[588] Cortot believed that physiological factors were linked to dexterity of the hands and fingers and to the control of the muscles and nerves.[589] He stressed the evenness, independence and mobility of the fingers and flexibility of the wrist. During the nineteenth century, improvements in piano construction resulted in stronger instruments that were capable of greater nuances in dynamics and expressive sounds. Therefore, pianists needed to refine the manner in which they played the instrument. The use of arm weight, relaxation, and the coordinated action of all parts of the arm became important techniques and were subjected to increased examination. Adolf Kullak advocated the use of the entire arm for more intense expression, and its influence to tone production. [590] He supported the complete relaxation of the entire playing apparatus from the upper arm down to the finger-tip.[591] Deppe advocated playing with weight and free fall and objected to extreme lifting of the fingers and to isolated finger technique because these techniques hindered production of the singing quality of tone. Mason defined the "relaxed arm" as a condition of perfect suppleness throughout the arm, hand, and fingers, without constriction in the playing apparatus.[592] Matthay emphasized arm-weight with relaxation for its production of a singing tone quality at the pianoforte.[593] He believed that relaxation was the requisite element for tone production and that stiff wrists and stiff fingers were the outcomes of incorrect or impeded muscular action. Breithaupt stressed the using weight and using the entire arm, with fully relaxed muscles and loosened joints, to produce the finest tone.[594]

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[588] Lebert and Stark. *Theoretical and Practical Piano-School*, 1.
[589] Cortot. *Rational Principles*, 1.
[590] A. Kullak. *The Aesthetics of Pianoforte-Playing*, 97.
[591] Ibid., 103-104.
[592] Mason. *Touch and Technic*, 15.
[593] Matthay. *The Act of Touch*, 22.
[594] Breithaupt. *Natural Piano-Technic*, 67.

Elasticity was considered essential for producing a rich and beautiful tone color,[595] and the flexible wrist was emphasized for producing a singing quality of tone.[596] Neuhaus stated that the conditions for good tone are complete freedom and relaxation of the arm and wrist from the shoulders to the tips of the fingers.[597] Ortmann, on the other hand, believed that a completely relaxed joint did not exist. He stated that the "resting" of the arm upon on the keys was not a relaxed arm condition; mild fixation existed in all joints.[598] He asserted that some degree of fixation existed physiologically. Sándor advocated partial relaxation but objected the concept of total relaxation. Berman also disapproved of complete relaxation in piano playing.

Coordinated movements or coordination of playing mechanism was emphasized as an important technique. Whiteside believed that mechanical perfection could not be attained until each part of the hand and arm was in perfect coordination.[599] Sándor also stressed coordinated movement in the playing mechanism. He wrote that "technique was organized motions, and motions produce sounds. Sounds, motions, and emotions are interrelated." Sándor believed that "technique must be based not on the strength and endurance of our muscles but rather on their optimal coordination."[600] He stated further that "One must achieve a well-coordinated correct technique in order to produce a beautiful varied sound expressive of all the infinite shadings of human emotions."[601]

Schultz believed that understanding of the relationship between and interaction of pianist-generated force and the force of key-resistance formed the foundation for piano

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[595] Lhevinne. *Basic Principles*, 13.
[596] Ibid., 19.
[597] Neuhaus. *The Art of Piano Playing*, 69.
[598] Ortmann. *The Physiological Mechanics*, 126.
[599] Whiteside. *The Pianist's Mechanism*, 38.
[600] Sándor. *On Piano Playing*, x.
[601] Ibid., 3-4.

playing technique.[602] He emphasized the development of a beautiful tone quality through the predominant use of small muscles. He stated that "the small muscles provide the sensitiveness to key-resistance."[603] Unlike Schultz, Whiteside and Fink emphasized the importance of the larger parts of body and movement. Because she believed that the center controlled the periphery, Whiteside advocated the coordination from center to periphery in manner of using power.[604] Fink claimed that the pianist must recognize and master piano-playing movements in the larger parts of the body before smaller parts.[605] Regarding piano playing movements, Gát emphasized that movements should be associated with musical element and with tone relation.[606] He wrote that

> When playing the piano, our movements are in the service of tone production. Only that movements will be expedient which serves to make the piano produce a tone adequate to our musical concept. We have to concentrate on tone production and not on setting the key in motion. Do not play on the keys but – with the aid of the keys – on the strings.[607]

4.7 CRITICAL LISTENING AND AUDITORY PERCEPTION

A pianist must learn to listen the slightest differences and changes in playing including the quality of tone, dynamic shading, phrasing. Deppe made students listen to every tone. Ear-training was an important aspect of his instruction. Deppe made efforts to "awaken a keen sense of tonal beauty in the minds" of his students.[608] Leschetizky stressed the importance of accurately listening to one's own playing in order to produce good tone quality, saying that "listening to the inward singing of a phrase is of far more

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[602] Schultz. *The Riddle of the Pianist's Finger*, 204.
[603] Ibid.
[604] Whiteside. *Indispensables of Piano Playing*, 4.
[605] Ibid.
[606] Gát, *The Technique of Piano Playing*, 81.
[607] Ibid., 82.
[608] Kochevitsky. *The Art of Piano Playing*, 9.

value than playing it a dozen times."[609] Gieseking and Leimer emphasized critical self-hearing as the most important factor in all of music study. They stated that a sensitivity for beautiful tone and for finest tone-shadings could be developed through a continuous self-hearing.[610] Whiteside also acknowledged that condition of listening affected tone production and the training of the fingers.[611] Neuhaus believed that "only those who clearly hear the continuity of the piano tone (the vibration of the strings) with all the changes in volume could recognize all the beauty."[612] Schultz addressed the close interrelationship between auditory sensation and psychological reaction, and he acknowledged that artists and pianists listened to tone quality in different ways.[613]

4.8 LEGATO AND SINGING QUALITY

Many pedagogues associated the piano's tone quality to that of a good singer and often recommended learning to play with artistic beauty by listening to melodic keyboard lines as if they were vocal lines.[614] Berman also acknowledged that, for the pianist, beautiful sound usually refers to a singing quality of sound. He stated a singing quality was difficult to attain from the inherently percussive quality of the piano.[615] He emphasized the listening in between notes to achieve the singing quality of the musical phrase. The importance of a singing quality of tone on the piano was also addressed by Neuhaus. "Since the basis of all audible music is singing and since piano literature is full of cantabile," he stated, "the first and main concern of every pianist should be to acquire

[609] Newcomb. *Leschetizky*, 19.
[610] Gieseking and Leimer. *Piano Technique*, 5.
[611] Whiteside. *Indispensables of Piano Playing*, 5.
[612] Neuhaus. *The Art of Piano Playing*, 62.
[613] Schultz. *The Riddle of the Pianist's Finger* 202-203.
[614] Prater. "A Comparison of the Techniques," 77.
[615] Berman. *Notes From the Pianist's Bench*, 4-5.

a deep, full, rich tone capable of any nuance, with all its countless gradations."[616] Schultz considered legato to be the most important factor in tone-quality differences, saying, "legato must be employed not merely to conform to a set of musical rules, but rather to produce a vital and highly attractive sensuous beauty. It is the absence of this beauty which is so often misconstrued as ugly piano tone."[617] Fink believed that degree to which the pianist used legato influenced the quality of the piano's sound. He stated that "The ability to perform a consciously controlled, overlapping finger legato enables pianists to enrich their sound in ways that are more subtle than the use of the pedal alone."[618] Lhevinne believed that the quality of tone and touch played a crucial role in legato phrase.[619] Newman affirmed that developing the ability to play by ear would enhance learning by increasing the pianist's ability to perceive notes in groups and to perceive harmonic relationships.[620] Therefore, the pianist would develop more fluent playing and a sense of direction. Newman stated that developing a sense of direction did not change tone quality but did have the psychological effect of calling more attention to tone quality.[621]

4.9 PSYCHOLOGICAL ASPECT, MENTAL PERCEPTION, AND IMAGINATION

Psychological aspects were investigated by pedagogues as influential factors in the development of piano pedagogy in the twentieth century. According to scientists, all perceptual and cognitive brain functions are based on electrical impulses generated,

[616] Neuhaus. *The Art of Piano Playing*, 67.
[617] Schultz. *The Riddle of the Pianist's Finger* 197.
[618] Fink. *Mastering Piano Techinique*, 126.
[619] Lhevinne. *Basic Principles*, 37.
[620] Newman. *The Pianist's Problems*, 6.
[621] Ibid., 115-121.

transmitted, and transferred by neurons.[622] They claimed that "even aesthetic feelings are related to neural information processing."[623] Leimer and Gieseking stressed that mental perception, a refined ear, and technique were closely related when executing accurate playing.[624] Cortot acknowledged that the psychological factors of imagination, taste, reasoning, and style influence the pianist's choices for shading and tone. Lhevinne also believed that beautiful tone quality, a refined ear and various styles of touch could be obtained through the mental conception of sound or sense of tone.[625] Newman was concerned about the pianist's inner state and in relation to producing different tone qualities. Kochevitsky also affirmed that a relationship existed between the pianist's inner concept of tone and the quality of pianist's tone. He addressed the psychology of the human being, especially how the central nervous system directs and controls the activity of our playing apparatus.[626] He stated that "Practicing at the piano is mainly practicing of the central nervous system, whether we are aware or not."[627] Whiteside believed that great pianists' inner drives for a beautiful tone quality lead to perfection of the mechanism.[628] Breithaupt stated a quality of sound was a combination of the mental effort of emotion and the co-ordination of muscular movement.[629] He believed in the mental capacity's importance in regard to the perception of and activity of tone-gradation and tone-shading. He stated that "The richer, the more varied or graduated the psychical scale of sentiment or emotion, the richer and more varied will be the dynamics of the tone

[622] Roederer. *The Cambridge Companion*, 12.
[623] Ibid.
[624] Leimer and Gieseking. *Piano Technique*, 20.
[625] Lhevinne. *Basic Principles*, 17.
[626] Kochevitsky. *The Art of Piano Playing*, 38.
[627] Ibid., Preface.
[628] Whiteside. *Indispensables of Piano Playing*, 3.
[629] Breithaupt. *Natural Piano-Technic*, 65.

diversified by the most delicate gradations and shadings."[630] Gát alleged that by creating the illusion of altered tone color through dynamic differentiation the pianist's mental image of and perception of tone color affected the listener's perception of tone color. [631] He expressed that "The pianist plays on the imagination of his listeners. The pianist's way of signaling tone colours arouses more beautiful tone-colour concepts in the listener than the real, objective tone colour of any other instrument, because the flight of fancy always transcends reality."[632] Schultz also recognized the roles of psychological reaction, imagination, and wishful hearing in modifying the effects of auditory sensations.[633] He elucidated that the nervous system reacted to various sounds differently and influenced the ways in which different sound qualities were heard.[634]

4.10 CONCLUSION

When examining piano pedagogues' thoughts and attitudes toward tone quality and sound production, strikingly varied opinions throughout the history of piano and keyboard teaching emerge. Arguments regarding the production of tone include discussions on the construction and development of the instrument, human physiology, applied physics, scientific experiments, psychology, audiation, artistry and musicianship. Each pedagogue examined in this study contributed valuable insights to one or more of those areas of thought. This study suggests that individual insights on tone production are often irreconcilable with other differing opinions and are possibly germane only to the individual pedagogue's personal teaching approach or the needs of their students.

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[630] Ibid.
[631] Gát. *The Technique of Piano Playing*, 18.
[632] Ibid., 21.
[633] Schultz. *The Riddle of the Pianist's Finger* 202-203.
[634] Gerig. *Famous Pianists & Their Technique*, 466.

However, in the aggregate, knowledge of those individuals' approaches to piano tone quality and sound production remain invaluable resources for piano teachers and provide context for the continuing development of piano playing as an art form.

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