

# ADDENDUM

Updated Jan. 23, 2012

This Addendum contains material that will be included in the next edition of [Fundamentals of Piano Practice](#) if, and when, it is written. Any ideas/comments would be appreciated, as this site is still under construction. Please [email](#) me your comments.

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## Errata

P. 172: “the sound velocity in amniotic fluid is different from that in air with a resultant change in apparent frequency” is wrong. The frequency does not change. Thus exposing babies to music before birth may help them to develop musically. There is no evidence that it will be detrimental.

# Introduction

This addendum is an example of what I meant by “this book is not a finished product, it is just the beginning” (back cover of book). The future of piano pedagogy has unlimited potential and how far it advances depends only on our efforts, and the methods we use, to study how to study. This book is not the only pioneer advancing piano teaching methods; there are now many web sites and teachers who are applying modern education methods to piano teaching with similar results (see Book Reviews, bottom), although this book is the most comprehensive. This phenomenon is a consequence of the advancement of education in general, which tells us that higher education outside of music will become increasingly helpful and necessary to future pianists.

The most important musical/biological lesson of this book is that music is a particularly useful device for developing the human brain (section 1 below), and that teachers can control this development. In the past, music pedagogy had too often ignored (or was unaware of) this possibility and ascribed the students’ progress to talent.

The most important practical lesson of this book is project management (see item 8): how to manage a project from beginning to end. It is important because the same principles apply not only to learning other musical instruments, but also to everyday life, school, and work. Historical accounts indicate that Alexander the Great used similar methods to defeat armies much larger than his.

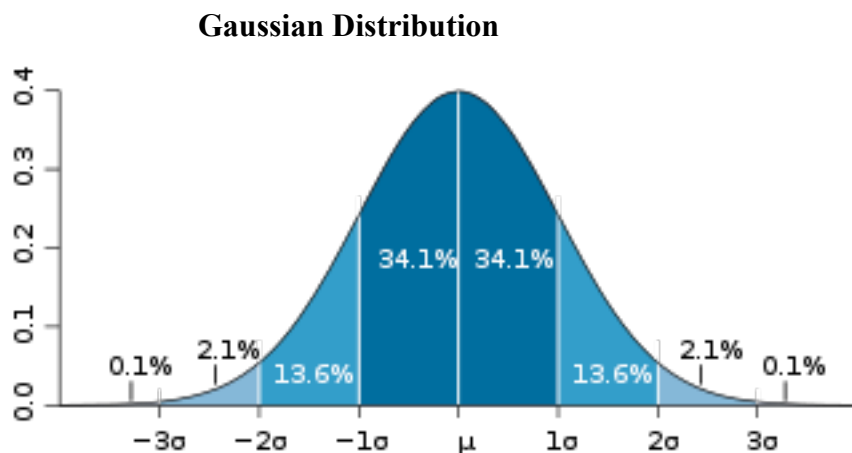
This book also contains several new discoveries and teaching methods that cannot be found anywhere else in the literature; the major ones are listed in item 9.

## 1. Creating Geniuses

This book deals with the human brain and how to use it to produce music. ***The greatest discovery of this book is that we have found the procedures for creating geniuses.*** To this end, we must define what a genius is. Prodigy, talent, and genius are basically synonymous here. We can distinguish at least two classes of geniuses: Class I consists of those who have acquired so much musical knowledge and skill that they can perform incredible musical feats; Class II consists of those with inborn musical minds, such that with little musical training, they can perform those same incredible musical feats. Discussions on whether geniuses are born or created are presented on pages 16 and 202 of the book. Until the 1900s, the assumption was that they were born (Class II). However, there has been a growing realization that they can be created (P. 16, Olsen). This is somewhat analogous to the now discredited belief that some are born with absolute pitch – nobody is born with it; everyone must learn it. In fact there is ample evidence that Class I geniuses exist, and that most of those we consider to be geniuses are of the Class I type. The number of Class II geniuses is extremely small and most of them have handicaps that prevent their geniuses from fully developing. ***We therefore conclude that the majority of famous geniuses are Class I -- they were created.***

There is little doubt that, given a group of equally diligent students with similar backgrounds, there will be those who will excel and those who will fail. Similarly, if you teach absolute pitch to a group of youngsters, some will learn more quickly than others. Obviously the human population has a *distribution* of brain powers from very poor to very good, and such a distribution also exists for musicality. Those with musical brains above a certain point in this distribution are labeled as geniuses. Let's use a Gaussian distribution for this discussion, as this distribution matches a surprisingly large number of actual

distributions in the real world and should be a good representation of musicians:



The horizontal axis represents intelligence, or learning rate, and the vertical axis is the proportion of students with that intelligence. The center is indicated by the letter “mu” and important points are indicated by 1 sigma, 2 sigma, etc. The area under the curve represents the number of students within that intelligence range. Most music students fall within the dark area around the middle (68.2%); the fast learners fall in the lighter areas to the right, and the slow learners are to the left. Let’s suppose that those we label as musical geniuses comprise 0.1% of the student population, as labeled on the far right. Now if a terrific new teaching method were discovered so that every student improves, the entire curve will shift to the right, so that, for example, 2.1% of students perform as well as the previous 0.1% of geniuses, as labeled on the distribution. The number of geniuses has increased by a factor of 20! The astounding implication is that *there is no evidence today that the distribution can’t be pushed up so that 50% or more of the population can be raised to today’s genius level with proper education and other means yet to be discovered*, see section 6 above (Scientific Method).

Thus knowledge can replace raw brain power. To see this, suppose we take an average 5th grader today and time-port him back to Egypt 8,000 years ago and suppose that he had written down everything he knows about math. He would have been recorded in history as the greatest mathematical genius of all time!

If this book, and emerging modern methods of teaching, are as revolutionary as the testimonials they have received indicate, there will be many more geniuses in the near future than there are now. This should apply not only to piano technique and performances, but also to music composition, originality, and inventiveness. ***Better teaching methods may result in many more Mozarts, Beethovens, and Chopins of the future. Good teaching methods can create geniuses!***

What are some of the elements of this genius-creating-procedure? For details, you will have to read the book because of the amount of knowledge needed to execute it. We can summarize here some of the prominent points:

(1) It is important to start young, when the brain is developing and adapting to its environment. Historically, the famous geniuses were created by their parents who were already musicians, sports figures, performers, etc., and knew how to teach their very young children.

(2) The teaching/learning methods must follow proper project management procedures. Without a structured plan, most projects will fail. For musicians, learning the piano is one of the best structured plans for learning project management. The most important elements in this plan are the practice methods, which

include: Mental Play, Absolute Pitch, Memorization, Piano Technique, Music Listening and Training, Knowledge (college level education), etc., as outlined in this book.

(3) Experimentation and self reliance. You can not rely on some master teacher to make you into a genius; you must control your own development. Part of that control, nevertheless, is seeking out good teachers that can advance your musicality as well as interacting with a select group of musicians who understand “genius”.

One way of measuring genius is the IQ (Intelligence Quotient). There are three levels at which learning piano can raise your IQ:

(1) You have an *intrinsic IQ* -- how good your brain is. This is the most difficult IQ to raise, but performing musical feats will exercise the brain in such a way that it works better, just as exercising will enlarge the muscles and increase your strength. One of the objectives of practicing mental play is to increase the mental stamina and to train the brain to work all the time without requiring periods of rest and inactivity. This will increase blood flow to the brain and increasing the blood supply, by enlarging the blood vessels and making them more elastic, or even increasing the amount of blood in the body.

(2) Your *effective IQ* -- how well you use the brain power that you have. A person who uses the brain more effectively will appear smarter than one with the same brain that does not know how to use it. This difference can be made unmistakably obvious for piano because pianists can do things on the piano that non-pianists can absolutely not do. Thus it is easy for pianists to raise their effective IQ to much higher levels than their intrinsic IQ. In fact, most of this book is about methods for raising the effective IQ: efficient practice methods such as using parallel sets to quickly speed up play are extremely effective.

(3) *Perceived IQ* -- how others judge your IQ. Mozart, Beethoven, etc., have some of the highest perceived IQs. A unique feature of the perceived IQ is that it can be raised far above even the effective IQ. In a sense, the intrinsic and effective IQs are real -- you should be able to devise methods for measuring them. Perceived IQ is purely “in the eyes of the beholder”; it can be raised to any level by using methods or tricks just as magicians do, to perform “miracles”. What is surprising is that all accomplished musicians do this routinely, whether they do it consciously or not. In a way, musicians are magicians with their own set of tricks. Using music as an algorithm to memorize 5 hours of repertoire is such a trick. Mozart used mental play to read sentences backwards. Combining mental play and Absolute Pitch is another.

Every pianist should be aware of these different IQs and cultivate them -- this is the fastest way to raise them as high as possible. The result is what everybody calls a genius.

## 2. MOZART'S FORMULA (see P. 206)

I have located the music professor who lectured on Mozart's formula in December of 1977 at a Bell Laboratories Research Colloquium, at Murray Hill, NJ, that is mentioned on P. 206. He is Professor [Robert Levin](#) of Harvard who talked about “Mozart's Fingerprints: A Statistical Analysis of his Concertos” concerning a “specific and sophisticated hierarchy of musical motives that underlies the Mozart concerto form” (Levin). I have to thank Brian Kernighan (co-author of “The C Programming Language”) for locating the records to this lecture which was still stored in his computer after more than 30 years. After several email exchanges with Prof. Levin, I have arrived at the following account of the events that led to my analysis of Mozart's compositional microstructure discussed on P. 206.

Prof. Levin did not discuss the microstructure of Mozart's compositions that I discuss in my book but instead lectured on a hierarchy of musical motives that were so specific as to be potentially useful for

authenticating Mozart's compositions. On the one hand, I was disappointed with the lecture because of my ignorance of musical motives; I was hoping to hear that there was a more easily understandable musical structure. On the other hand, Prof. Levin awakened my awareness of *structure* in music. I am a crystallographer, who deals with the atomic structure of matter, so this awareness led me to examine Mozart's music to search for any structure simple enough for me to recognize.

As a crystallographer, I am accustomed to discerning the repetitive microstructure of matter that determine the properties of each material. If you take just one atom, carbon, you can change the atomic microstructure and get anything from hard, brilliant diamonds to lubricating graphite to light weight golf club shafts and even buckyballs with amazing properties and uses. It was no surprise, therefore, that the repetitive structure of Mozart's music jumped out at me as soon as I examined it from a structural point of view. For those not accustomed to dealing with microstructure, this repetitive structure in music is not easily recognizable because it appears to have no obvious relevance to the melodic progression. I have tested this recognition with my musical colleagues and it took most of them a while to recognize this structure as a part of the music. This lack of recognition has historically impeded the pursuit of this microstructure because, for musicians, it seems so trivially simple that it does not deserve attention. One of the best examples of this is the slow movement of Mozart's Piano Concerto No. 21, which is generally considered to be non-repetitive because the incredible emotional content hides the repetitions.

Repetition, of course, is key to most music. The time signature governs the entire piece, so the rhythm is 100% repetitive. In rap music, both the rhythm and melody are repetitive, with mainly the lyrics changing. Mozart's music uses mostly a single repetition (2 units in a row). Bach uses repetitions extensively, but is not mainly confined to a single type like Mozart's. In the Inventions, Bach uses 2 repetitions most frequently (3 units in a row – see Invention #8). Repetitions on larger scales are also important, as Ruth Slenczynska wrote: “play all repeats marked by the composer” (Slenczynska – P. 49) - instructions from a seasoned pianist, because the repetitions are there to elicit a specific reaction from the audience. Clearly, musicians must develop a deep understanding of repetitions and how to use them.

These types of repetitive structures are well known among composers, and articles on music analysis and composition are starting to discuss them in greater detail (Brandt). Even the pitch sets and symmetries similar to those discussed on P. 209 (in Beethoven and Group Theory) have appeared in the literature (Bernard, Solomon).

## References

**Bernard**, Jonathan W.: ["Space and Symmetry in Bartok" Journal of Music Theory 30, no. 2 \(Fall, 1986\): 185-200.](#)

**Brandt**, Anthony: ["How Music Makes Sense"](#).

**Levin**, Robert: "Improvisation and Musical Structure in Mozart's Piano Concertos." L'interpretation de la Musique Classique de Haydn à Schubert. Colloque international, Évry, 13-15 octobre 1977. Geneva 1980, Minkoff, 45-55. (English version of a paper delivered in French.)

**Levin**, Robert and Leeson, Daniel N.: "On the Authenticity of K. Anh. C 14.01 (297b), a Symphonia [recte: Symphonie] Concertante for Four Winds and Orchestra." Mozart-Jahrbuch 1976/77, 70-96.

**Slenczynska**, Ruth, "Music at your Fingertips", Cornerstone Library (Simon & Schuster, NY), 1968.

**Solomon**, Larry: [Bach's Chaconne in D minor for solo violin](#), see Variation Techniques.

### 3. Memorizing (how to)

We discussed methods for memorizing in section III.6, and we saw that there are at least five types of memory: hand memory, photographic memory, music memory, keyboard memory, and theoretical memory. The natural question that arises is, “which is the best one to learn?”

The answer is “*ALL of them!*” Wouldn't that be a waste of time that can be better spent practicing your repertoire? Let's see why we *need* to learn them all.

(1) Memory is associative; therefore, in order to truly memorize a composition, the use of all of the memory methods is needed to maximize the associations. That is, as musicians, we must ask ourselves, do I want perfect memory, or will I be satisfied with just partial memory? Do I want to be a true professional concert pianist, or will I be satisfied with being an amateur pianist?

(2) To a professional pianist, each memory method has its particular use. **Hand memory** makes it easier to play. Without it, the brain would have to send every instruction to every muscle over the entire body to play even simple notes – without hand memory, the brain would be totally exhausted by the time you play one page of music. **Photographic memory** is needed for composing, and testing your memory away from the piano. It is the link between the music you play and the original notes from which you learned the music. It contains the original instructions from the composer to the performer. It is an essential component of Mental Play. **Music memory** is part of the basic algorithm that allows us to memorize an almost infinite repertoire. It is the reason why we learn piano! No one performs without music memory. **Keyboard memory** is most useful when you are learning a new piece. Therefore, it is the first memory method that we consciously practice. **Theoretical memory** is useful for analyzing the composition and understanding why certain notes are there, and for automatically memorizing large chunks of the composition without the use of photographic or keyboard memory. All of the memory methods can be, and should be used for mental play. These are just the major uses; there are many more. We have come to the realization that each memory method deals with different properties of the composition, so that if we are to totally memorize it, we need all of the memory methods.

(3) In fact, it is a waste of time not to learn them all because if you learn one of them well, you have already learned large parts of most of the others and can learn them more completely in a short time. Moreover, you gain all the associated benefits with this small investment of time. If you don't learn all of them, you are effectively throwing away those very resources that distinguish a genius from an amateur. These points (1) - (3) lead naturally to the question, what is the best procedure for learning all of them?

During practice, we learn hand memory automatically, so we do not need to practice it consciously. But we must know what it is, and encourage its growth. We also saw that keyboard memory is the first memory to practice because it is most useful when first learning a new piece. Because you use the music notes to learn the composition, photographic memory can be practiced at this time and then later, during mental play. Music memory is also automatic, especially if you practice musically. Theoretical memory is the only one that is different from person to person because it depends on how much theory you know. The degree to which you can apply theoretical memory depends on your theory education. However, even without advanced theory education, anyone can make structural analyses of the music, which can serve as a theoretical memory.

Surprise! We have come to the realization that learning all of the memory methods follows naturally from the process of memorizing a composition. This is one of the reasons why practicing a passage over and over doesn't have to be boring, because there is so much work to do.

## **4. Parallel Set Exercises: Importance of Exercise #1**

Most pianists do not fully realize the importance of Ex. #1 in the Parallel Set (PS) exercises (P. 128). This happens because Ex. #1 does not look like a PS exercise, it is just an exercise in repetitions. However, Ex. #1 is the foundation of all PS exercises and you will not progress as rapidly without first making sure that it is satisfactorily completed. This is because it teaches the larger members of the playing mechanism the correct motions. It separates out the motions of the larger members (arms, hands, body, etc.) from the smaller motions of the individual fingers. In fact, most students should spend more time with Ex. #1 than the actual PS finger exercises that necessitated its use, for the most difficult techniques. The good news is that, because repetition is mostly a single skill, once you acquire it, it will apply to most PS exercises. This is more reason why starting students should invest a lot of effort in practicing Exercise #1.

An excellent example is the LH octave tremolo in the Allegro (following the Grave) in Beethoven's Pathétique Sonata, first movement. In order to speed up this tremolo, you must practice the 51 PS. ***However, you must start by practicing repeated 51 octaves (Ex. #1).*** This point cannot be over-emphasized. Once this becomes satisfactory (four quads at the desired speed or faster, relaxed, without fatigue), a quick way to increase speed is to play a fast double octave, 51,51, then immediately follow with 51,51 and 15,15 PSs. When these become satisfactory, increase to three, then four, etc. Then follow the instructions on P. 77.

## **5. The Future of the Piano: the Digital Revolution**

One development that is certain to dominate the piano universe is the ascent of the digital piano and electrification of piano performances. Electric guitars already dominate the guitar universe and electronic violins are gaining acceptance. By separating the mechanical action of the key drop from the process of audio generation, we now have a totally new paradigm for the piano. For example, everyone can now afford the sound of a 9-ft grand (or 12-ft or . . . .). Keyboards, specifically designed to produce the appropriate midi outputs, have become affordable. In the future, we should have half size or  $\frac{3}{4}$  size pianos for youngsters (or those with small hands), just as for violins, that produce the sounds of a concert grand. There can also be pianos with oversize keys for those with fingers that are too large to fit between the black keys and each person can carry his personal piano around. New developments, such as modeling software (e.g. Pianoteq), will replace the memory (computer) intensive and relatively limited audio sampling methods.

We should also be realistic and call the "acoustic" piano a mechanical piano. Both the mechanical and electronic pianos are acoustic. There is nothing non-acoustical about an electronic piano. The present

usage of the “acoustic” piano terminology simply results from a sense of respect to give mechanical pianos a better sounding name, at the cost of a confusing terminology and an implied incorrect definition of “acoustic”.

The upright mechanical piano is mostly obsolete except as a (expensive and heavy) decorative furniture. Electronic pianos will be the pianos of the future.

I certainly hope that the best grands in existence today will be available for the foreseeable future because they are the standards with which to compare the new technologies. But the present rate of development of the electronic pianos extrapolate to a time, soon, when electronic pianos will be used in concerts to great effect (we are not there yet), especially in concertos where mechanical pianos often cannot compete with a large orchestra. These developments will make the piano more popular and will be good for the piano industry. Pianists are finally freeing themselves from the old mechanical bondages and will be enjoying the new capabilities appropriate to today's artists. Animes and computer generated movies already compete with human actors for our enjoyment and computer generated voices (complete with librettos) are indistinguishable and, in some cases, sound better than actual human voices. The piano will not be left behind.

However, at this writing, in 2011, the best mechanicals still outperform even the most expensive digitals by a significant margin for concert pianists, especially for classical music. For non-concert pianists, digitals are now adequate in a large majority of cases and provide features not available in mechanicals. Students should have no reservations about starting to learn piano on a digital, and teachers should not insist that the student acquire a mechanical piano until the student approaches concert pianist levels. In fact most uprights are inferior to good digitals that cost much less.

## 6. Defining Science and the Scientific Method

Near the bottom of P. 203, I wrote “I have had endless discussions with scientists and non-scientists about how to define science . . . .”, obviously without much agreement. I had wondered all my life about why the definition of what seems so simple was so controversial. This dilemma was embarrassing to me because I am a scientist. I have finally solved that riddle! The definition of anything depends on (1) the person defining it, (2) the person for whom it is intended and (3) the purpose for which the definition was created. For example, to a cook in a diner, an omelet is something he makes and sells; to a customer, it is something to eat for breakfast. Except for scientific terminology (which can include musical terms) defined for specific purposes, relatively few definitions have universal applicability.

Science, in its broadest sense, is the study of the universe (or truth) and is therefore infinitely complex. Such a definition is of no use to a person trying to learn piano practice methods. The definition needed in this book is one which explains the relevance of science to piano practice. To that end, the definition I chose seems quite appropriate: “a scientific method is any method that works”. That is, you don't need to be a scientist to use science – in fact, *everyone* already uses scientific methods every day. Then I listed the specific (scientific) methods that help to achieve this goal of finding methods that work (P. 204). Few methods are either scientific or non-scientific; we live in an imperfect grey world in which a procedure can only be more scientific than another. Thus the belief that science is absolute truth and that science is only for the super intelligent are misconceptions. My message is that science allows ordinary folks to do what was perviously impossible or difficult. That is how I used scientific methods in this book.

My attempt at a scientific approach is not the first and is an imperfect one at best. Let's look at the historical imperfection of science itself and compare it to the history of piano pedagogy to see what we might expect of piano pedagogy in the future if the scientific methods were more widely applied -- we expect similarities between the evolution of science and that of music because both evolved as new discoveries were made.

Before Columbus's time (1451-1506), the flat earth scientists dominated and no one knew anything about gravity. Newton (1643-1727) then worked out some of the early laws of physics, thus correcting numerous old misconceptions. Einstein then showed that Newton was wrong because nothing can travel faster than the speed of light and you had to use relativity theory. Then came quantum mechanics which proved that neither Newton's equations nor relativity could explain what happens at the atomic scale. Quantum mechanics is still not totally understood, so that brings us to the forefront of science as it exists today. Physicists still do not understand such everyday things as time, mass, and gravity. Thus there are as many questions today as in the days of the flat earth. Perhaps better understandings of dark energy, dark matter, black holes, string theory, etc., might shed some light on those questions. Nonetheless, the progress made in such a short time, while music almost stood still by comparison, is nothing short of astounding. Imagine what musicians might be doing today if similar progress were made in musicology!

How does piano pedagogy compare to this timeline of scientific development? Hanon and Czerny might represent the flat earth times because of the large number of obvious misconceptions; in fact, from an evolutionary point of view, Bach was ahead of them. This is an illustration of a major problem in music pedagogy because it evolved backwards as well as forwards -- a phenomenon that can be avoided by using scientific methods. Publication of my book might bring us to the time of Newton, when many everyday problems were solved. Thus there is still much serious research that needs to be conducted and we can expect some very important improvements still to be discovered in music. The inefficient, time-consuming practice methods of the past had prevented musicians from getting a broader education and even the major conservatories have not made any significant advances in music pedagogy for over a hundred years. With the advent of improved education, musicians can now conduct more research and reap the rewards of the scientific approach which so many musicians of the past have attempted, but failed because of a lack of education. Progress cannot be stopped -- it is only a matter of time and those with the courage and initiative to do what needs to be done will reap the rewards of greater efficiency and deeper understanding.

Perhaps the greatest discoveries in music will come from brain studies and neuroscience. Music conservatories must take the initiative to research music scientifically and apply knowledge-based methods of teaching. Sadly, neuro-scientists today know more about the musical brain than conservatory professors (Levitin). Instead of assuming that you must be a genius to be a musician, we must research how to make musicians into geniuses.

Darwin's voyages have now been replaced by molecular science, alchemy has evolved into today's chemistry based on quantum mechanics, the studies of economics now have firm mathematical foundations, philosophy evolved into physics and cosmology which cannot exist today without the highest mathematics, we lived in caves until the industrial revolution made food, shelter and education available to everyone, medical practices now use instruments and bio-chemistry that can literally resurrect the dead, etc. It is now time for musicians to take advantage of this inescapable progression of proven methods of achieving miracles that even creators of the bible could not have imagined.

## 7. How to Teach Piano

This book provides most of the basic information needed to teach piano. Here we outline a specific procedure so that interested teachers can find all the components and see how they fit together.

(1) Every teacher must have a computer and be able to email and access the internet. That is, communications among teachers and constant education are necessary ingredients of a teaching profession. A smart phone can be an acceptable substitute, and it can often be tethered to a computer, so that a separate internet line may not be necessary.

(2) A text book, such as this book, should be used so that teachers can assign relevant pages to read for the students and parents. Ideally, there should be several standardized textbooks for each level of student, and this will surely become available in the near future. All basics taught in the lessons should be in the textbook(s). For young students, the parents must also read these textbooks.

(3) Next, the teacher must decide what to teach; these topics include:

Reading,

Memorizing,

Musical notations and elements of music theory (scales, intervals, chords), and the circle of 5ths,

Key and time signatures,

Rhythms,

Technique development methods (practice methods of sections I to III of Chapter One),

Relaxation,

Fake books, chord progressions, improvisation, etc.,

Mental Play and music composition (dictation),

Absolute pitch,

Performance skills, including control of nervousness using mental play,

Temperament (elements of piano tuning), and most importantly,

Musicality.

Students can be taught from age two. For those younger than age 4, an important component of lessons is listening to all the major compositions from Bach to Chopin, etc., including piano concertos and symphonies. Yes; no child is “too young” for Chopin! This can be achieved by playing the music while teaching the students to read music or theory, or even when they are doing school assignments or other work. Classical music has a beneficial effect when engaged in school work. The teacher can also play pieces, such as Chopin’s raindrop prelude, and explain the music as it is played (drops of rain falling, an oncoming storm, etc.). While playing symphonies, the teacher can point out various instruments by showing pictures of each instrument. Parents should be encouraged to let the students listen to a list of good music and the teacher should have a set of such music (DVDs, internet sites) ready to lend to the parents.

### 7.1 The First Lesson

The first lesson is important because (1) it sets the tone for all following lessons and informs the students and parents what is taught, (2) the student is evaluated during this lesson, and (3) the type of piano available for practice should be discussed.

At the end of this first lesson, the teacher should be able to tell the parents what the students need to be taught and how much the students already know and where the students stand relative to others of

similar age. This lesson can be as long as 2 hours even for youngsters down to age 6, and should be broken up into two or three sessions with breaks in between for rest and snacks. Obviously, the parents must attend this session and also be informed whether they should also attend the following lessons (which will depend on many factors, such as how busy the parents are, how much music they know, the degree with which they are involved in their children's education, etc.) and what the parents need to do at home to help the student's development. The parents must set up a specific time each day for the student's practice and monitor the student's progress. Here are the three sections of the first lesson:

(1) The beginning session consists mainly of discussions with parents and student. The teacher discusses how learning piano raises the effective intelligence and improves memory. How these teaching methods are different from the old (intuitive) methods, with much faster progress and more relevant music to play, bypassing most exercises such as Hanon and Czerny. Education, musicality, and performance (making music) are the main objectives. The concepts of Mental Play, absolute pitch, learning tricks, musicality and controlling nervousness are explained briefly, why they are necessary, and how they all fit into the program of teaching. Finally, the benefits of such a piano education are explained, such as learning project management, brain development, and preparation for better performance in school, at home, and at work. Elements of teaching talent and genius should be discussed. Take your time to make sure all the major concepts are fully understood; this may take close to an hour, so plan for a break here.

(2) The student is evaluated in the second part. Teach the student a well known duet, such as Chopsticks. The teacher first plays the melody part and the student the accompaniment. Test the following:

1. Learning ability, learning rate: can the student learn the accompaniment quickly?
2. Rhythm: explain waltz (Chopsticks); check for rhythm ability, accuracy.
3. Communication: play softer or louder, faster or slower, see if the student can follow by just listening to your play, without your telling her/im to follow you -- can you communicate with the student using music alone? This tests the student's ability to communicate using music.
4. If the student can learn the accompaniment, change parts and teach the student the melody part; this will be a harder test of learning ability. Use hands separate, segmental practice, etc. Now you can immediately show the parents that the student can play both the accompaniment and the melody in the first lesson! Now for some home work.
5. Teach C Major scale, using doremi, from middle C, how to pass the thumb (TU). This must be practiced for the next lesson.
6. Check for pitch capability (relative pitch) by letting student sing the notes.
7. Check for absolute pitch. Sometimes, this is the first time that the students or parents find out that a student has absolute pitch!
8. Assignment: most students (especially parents) already know the melody to the doremi song from the movie Sound of Music. Give the student the assignment of figuring out how to sing the song using doremi instead of the lyrics. Play the melody several times to make sure that the student knows it. The assignment is that the student should be able to sing it using doremi in the next lesson: do-re-mi,-do-mi-do-mi,-re. . . . etc.

(3) If appropriate, discuss what type of piano to use for practice. In general, electronic pianos are best for beginners unless they already have a piano. Most home mechanical pianos are out of tune and will destroy the students' absolute pitch and are not adequately maintained. By the time the students are good enough to require a mechanical piano, they will need a high quality grand, which is not needed for beginner students.

Finally, the teacher gives an assessment of the students' abilities: learning rate, rhythm, RP, AP,

communication, mental maturity: what the students lack, what they know.

## 7.2 Subsequent Lessons

Most teachers will have their own teaching routines for subsequent lessons. The most important point is to start right away with meaningful music that can be performed in preparation for the student's first performance. Mental Play (MP) and absolute pitch (AP) should be taught as soon as possible, preferably from lesson #1.

Nervousness is best controlled by assigning readily playable pieces for that specific student, and using Mental Play (MP). Controlling stage fright must be discussed and taught just as anything else in a piano lesson. The emphasis must be on classical music but popular music, and improvisation, should also be taught from the very beginning; this will help greatly with controlling nervousness and practicing performing and learning music that is more easily understood by a majority of today's population. There is always the tendency to assign the most difficult piece that a student can handle for performances, but this is exactly the wrong approach. The desire to perform more difficult pieces should come from the *student*, not as part of the teaching program. Students should be informed that nervousness is a normal consequence of inadequate preparation (including a lack of education on nervousness), and be given an outline of the program that will be followed for learning to control it, starting with MP, good memorizing techniques, and adequate technique. Students should be evaluated for susceptibility to nervousness and be informed on where they stand with respect to others because some are not nervous at all while others get terribly nervous under the same circumstances.

Today, MP is still difficult to teach because this is the first time that it has been included as an integral and major component of piano education and the teaching protocols have not been established and tested. Because MP occurs in the students' minds, it is difficult for the teacher to evaluate it, just as rhythm and counting are difficult to evaluate without a piano unless the students are asked to count vocally or make hand motions. One good way to teach MP is to teach dictation and photographic memory. The teacher can ask the student to write out a few bars of the lesson piece, at some randomly chosen point. Of course, the best evidence for good MP is music composition, so it should be encouraged as the student begins to compose. Formal composition lessons are not needed until the student asks for them, when they feel the need for help to achieve certain musical objectives. Playing modern music, especially improvisation and playing from fake books, is also a good way to practice MP.

Absolute pitch should also be taught, see 8.2. The best way to teach absolute pitch (AP) is to begin by accepting the fact that at least 90% of students will eventually learn it; the past misconception that AP is possible only for a gifted few is the greatest hindrance to teaching AP; it is already routinely taught in some music (piano) schools today to all students. Since many piano teachers had not been taught AP, their young students will learn AP faster than the teachers, and those teachers must accept that fact and nevertheless teach AP -- teachers without AP can teach it just as well as those who have AP. Of course, teachers without AP should immediately start practicing it, which will give them a better idea of how to teach it. Every lesson should include a session on AP.

The first lesson described above was very long, about 2 hours. Subsequent lessons should be shorter -- much shorter for the youngest students (less than 4 yrs old), 15 - 20 min., but as frequently as possible, 2 to 3 times a week; if this is not possible, break up the lesson into several short sessions with breaks in between. For more advanced students, because there is so much to be taught, lessons often go more than 1 hour.

## 8. Project Management

There are only a few basic rules for project management (PM); what makes PM complex is the fact that it is knowledge based. As you might expect, the success of any project depends on your relevant knowledge base. Therefore we discuss here the basic framework and some examples and classes of useful knowledge. We also look at some illustrative examples.

### 8.1 Basic Rules

(1) Any project must have a *plan*; one based on knowledge of what is needed to start, execute (with test and modify), finalize, and maintain the project after the it is completed. It must have a clearly defined *objective* and a *time table* for each stage. In order to create a viable plan, you must first gather all the information needed to successfully complete the project.

(2) Start: there is no universally applicable starting plan for all projects. The start is usually the most important part of the project because it is determined by everything that follows and therefore reflects the main plan of action for the project. The wrong start can doom a project from the beginning. Therefore, in order to know how to start, you must know how you are going to execute, finalize, and maintain.

(3) Execution: there are certain rules governing execution:

1. Never try the impossible; or equivalently, work in manageable chunks -- even easy chunks, if possible. In general, successive chunks should be contiguous.

2. Make sure that each chunk is finished before going on to the next one, or at least have a plan that will ensure successful finishing of that chunk. Practically all chunks of a project support each other; this is one reason why they should be contiguous.

3. This is the stage at which knowledge of the system you are working on is paramount. Every system has knowledge or experience based “tricks” that lead to success. Any level of education is helpful here because education not only provides knowledge, but also teaches how to search for knowledge.

4. The project must pass periodic tests to see if it is progressing according to plan and even the best laid plans often need to be modified or improved.

(4) Finalize: this is where many projects fail, either because of insufficient planning or because of faulty execution. Most failures occur due to incorrect assumptions, unattainable goals, or insufficient/wrong knowledge base. Again, education is important here because it gives you the knowledge needed to evaluate your assumptions, knowledge base, etc. In order to be able to finalize a project, you must have a precise definition of what it means to achieve the goal of the project, and to do this in the time according to the original plan.

(5) Maintenance: few projects are finished and then abandoned; worthwhile projects produce products that are useful for a long time and therefore require maintenance. This maintenance schedule must therefore be an integral part of the original project.

### 8.2 Example: Learning Absolute Pitch

Suppose that you had decided that you must learn Mental Play (MP) and that Absolute Pitch (AP)

was absolutely necessary for MP. So you embark on a project to learn AP. One such project is outlined starting on P. 155. In this project, you do not practice AP as such, but acquire it as part of a memory and MP process. The idea here is that you acquire AP (effortlessly!) as a byproduct of practicing MP. Thus it becomes a long term project with no deadline pressures but with the disadvantage that there will be no clear idea of when you will acquire AP; unfortunately, this violates a major project management principle (see 8.1). However, this procedure works for the very young (less than about 6 yrs old), because they learn AP so quickly that a deadline becomes meaningless. For older adults, it can take a long time, and can become frustrating; it may take years for those over 60 years old, while a 2 year old might learn it in a day.

The first order of business is to learn relative pitch (RP). Without it, you will not have enough pitch recognition ability to even start practicing AP. Therefore, if you encounter difficulties in acquiring AP, check and make sure that your RP is good. Play middle C, then imagine its octave, fifth, fourth, major third, minor third, full tone, and semitone (in decreasing order of importance), and check each one on the piano. That is, practice the octave first, until you become good at it, then the fifth, etc. It might take you days or more just to get the octave. Because you will most likely start learning AP using the C major scale, test your RP using this scale (white keys). Learn the black keys after you have acquired AP with the C major scale. Do not practice other scales at this time as will be explained below (paragraph on memory confusion). In practicing RP, it is most important to practice the octave, as this will allow you to acquire AP on all the notes of the piano by acquiring AP in just one octave.

AP is learned in one of two ways: (a) learn one note, or (b) learn a series of notes such as a scale, or a “simple” composition such as a Bach Invention (simple because it is based on parallel sets, P. 197), as outlined from P. 157. Obviously, AP practice must be combined with MP practice. After some practice period, your AP accuracy should improve gradually. This period will vary greatly (from a week to over several years) depending on the person, and on age.

Many become frustrated when progress is slower than expected and begin to fear that they will never get it. It is important to understand why progress is slow. AP is a type of memory, so if you can memorize a Bach Invention, you can attain AP. It is also similar to memory because in memory, the failure to memorize is not because the memory is not in the brain (it is permanently in the brain after hearing it only once), but because it cannot be recalled. So what is the cause of the failure to recall? It is confusion -- instead of recalling the correct answer, the brain either recalls the wrong one or follows a recognition path that leads to nowhere. This tends to happen when there are many wrong recall paths already in the brain. This explains why youngsters learn AP so fast -- there are few other paths in a young brain. Once the AP path is established in a young brain, it tends to get reinforced so that it remains dominant as long as AP is maintained.

This explanation of recall may also explain why the subconscious can often recall something that the conscious could not. When the conscious fails a recall, it reinforces this wrong path every time it tries to recall the same thing (and fails), making it harder to recall the correct answer. The subconscious is not used for establishing new memory, so that its search process does not reinforce the wrong search paths. So it can search more paths without getting stuck on one as the conscious does.

In older adults, chances of confusion increases because adults have heard so many wrong notes and different musics that the correct recall path becomes one of thousands of other possibilities and the chances of the brain locating the correct one becomes extremely small. This reasoning teaches us that, in order to acquire AP as quickly as possible, you must avoid as much of these confusing musical sounds as possible, and listen only to those sounds that you are using to practice AP. Therefore, one reason that your progress is slow may be that you are listening to too many other sounds between AP practice sessions.

Unless you are a singer, it is not a good idea to try to hum the notes while practicing AP because

untrained singers will tend to sing off-key, tending to be flat for high notes and sharp for low notes. There is nothing wrong with learning to hum on tune, but that is best done after acquiring AP, because humming off tune will confuse your AP. Another advantage of not humming is that part of practicing AP is practicing mental play. Thus by not humming, you are also practicing pure mental play. Play a note on the piano, then try to hum it accurately -- some will find this to be very difficult. In that case, do not hum while practicing AP. It is generally much easier to learn to “picture” the note more accurately in the mind, just as you hear it from the piano.

If, in spite of tremendous efforts, AP cannot be acquired, it is not productive to keep trying and building up frustration, because you are only building more confusion, similarly to building a speed wall or fast play degradation (P. 64). It is best to give the effort a rest, stop practicing and then restart some time later (usually over 2-3 months later). You should find that progress is much faster the second time around and the frustration level will be much lower. At this time, it is also important to re-read all the instructions for acquiring AP.

### **8.3 Example: [Lawn Care: A Weed Free Lawn](#)**

Although this subject is not related to piano, it is an excellent example of good Project Management; in fact, I learned a lot of project management principles, that are used in this book, while weeding my yards. The article is quite long, and is on my [Wisdom World](#) site.

## **9. New Methods, Explanations and Discoveries of this Book**

Although the major objective in writing this book was assembling the relevant information and organizing them into a useful structure, I also made some new discoveries that are not discussed anywhere else in the literature. I have listed these new elements in this section.

1. Mental Play must be taught as a major component of piano lessons.
2. How to control nervousness must also be taught, using Mental Play, memory methods, and technique acquisition.
3. The concept of Parallel Sets is generalized and explained; it is at once a diagnostic tool, and a means of solving technical problems.
4. Bach’s Inventions are based on Parallel Sets.
5. Genius can be taught (memorizing, Mental Play, absolute pitch, learning tricks and efficient practice methods); teaching efficient technique acquisition is the key element in creating geniuses and is most effective at the youngest ages; music composition is a natural consequence of this process.
6. Music is an Algorithm for Memory.
7. Why Gravity is the Basic Force in the Arm Weight Method.
8. A list of the disadvantages of Hanon type exercises.
9. Explanations of the ineffectiveness of intuitive methods and the counter-intuitive nature of the correct practice methods.
10. There are simple microstructures in music such as the use of repetitive small units of just a few notes. Although this has been known for a long time, my point is that microstructure analysis is a necessary first step in analyzing music (and eventually answering the question “what makes music,

music?"), because it leads to the second step, which is to explore the question "what are the relationships between these units that create the music?" Part of the answer seems to lie in the fact that harmonies and certain chord progressions follow the simplest mathematical relationships that are especially easily processed in the human auditory system. This theory also explains why dissonances and certain chord progressions are unpleasant (because there is no simple way to process them in the brain).

11. The starting "arpeggio" of Beethoven's *Appassionata* is a schematized, inverted form of his main theme, which starts at bar 35 (P. 70).

12. Explanation of how the beginning of Beethoven's 5th symphony (and *Appassionata*, 1st movement, bars 235-239) fits into group theory (P. 209).

## **Book Reviews** (listed alphabetically, see [Recommended Books](#) for how to buy them)

**Bailie, Eleanor**, "CHOPIN, The Pianist's Repertoire, A graded practical guide", Kahn & Averill, London, 1998, 573P., index of persons mentioned in the book, bibliography, index of Chopin works. Strangely, there is nothing in the book (or anywhere else) about Eleanor Bailie herself.

A monumental compendium (573 pages!) of practically all information available on Chopin's works, from history to technical details and interpretation.

Starts with brief reviews of general technical issues (especially as they apply to Chopin), but is not an organized textbook for learning piano. Examples: Play Bach to prepare for recitals, Chopin's music originates in Mozart. Pianissimo more important than FF. Importance of strict rhythm, especially in LH. Chopin's fingering and pedaling, especially the soft pedal. There is a section titled "Chopin's Teaching" but it contains little of substance; instead she defers to Eigeldinger's (P. 23-64) summary.

The main body of the book is the ~500 pages of comments on each composition. Hidden within these comments are numerous hints on how to practice, which is obviously valuable for anyone trying to learn these pieces; moreover, a compendium of all these hints would have produced one of the best textbooks on correct piano practice methods. Thus this book is much more useful to pianists than Eigeldinger.

**Levitin, Daniel J.**, "This Is Your Brain on Music, The Science of a Human Obsession", Dutton, NY. NY., 2006, 314P., bibliography, index.

### **General:**

This book is characterized by the words: definitions, classifications, science, errors, and statistical/illustrative details, as explained in the following paragraph; overall, a good start in the neuroscience of music, but the difficulty of the subject matter (the human brain which is mostly not understood) is painfully obvious.

Appropriately for a scientific treatment of the neuroscience of music, all basic terminologies are defined and various subjects classified so as to enable precise communications (first 3rd of book). This definition and classification process is in itself an enormous scientific endeavor because you need a lot of knowledge in order to define anything in a scientifically meaningful way. There are descriptions of musical, neuroscientific, psychological, etc., experiments that spawn explanations and theories -- just what we look

for in this book. Unfortunately, there are a few misinformations, errors and omissions that shouldn't be in a book published in 2006 which may cast doubts on the quality of the rest of the book. This was written for a wide audience with very different levels/types of education; it provides a glimpse into the community of neuroscientist musicians working to unravel the mysteries of music using modern science.

### **Details:**

The Introduction asks some (very relevant) questions but gives no answers. The first chapter introduces and defines relevant terms and concepts such as pitch and timbre (pronounced tamber). The surprise is how, in defining the terminologies to their ultimate depth, you develop a deeper understanding of music which he makes crystal clear with lots of examples. Sample: pitch is detected by the ear's basilar membrane in proportionate scale (mathematicians would say logarithmic) which is similarly mapped onto the brain; this determines the nature of musical scales and harmonies (followed by examples).

There are "this is not known . . ." type of sentences throughout the book which is indicative of an expert in his field who knows the limits of our knowledge. Some statements are controversial: "Pitch is purely psychological . . .", while others are wrong: "the eye sees a continuum of colors (frequencies) . . ." (it actually sees combinations of discrete colors [determined by quantum mechanics], much like color TVs and printers and is therefore based on an absolute scale, unlike the ear). Or this innocuous sounding but totally uninformed statement ". . . most people cannot name the notes except for the one in 10,000 who have absolute pitch." Doesn't he know that absolute pitch is learned? The level of ignorance in some sections is inexcusable, P. 204:

"I recently asked the dean of one of the top music schools . . . at what point is emotion and expressivity taught? Her answer was that they aren't taught. There is so much to cover, repertoire, ensemble, etc., etc., etc., . . . there simply isn't time to teach expressivity . . . some of them come in already knowing how to move a listener. . . .etc."

Unbelievable! Yet, probably true of too many music schools; sad. Moreover, this book has no discussions of the correct/wrong practice methods and their effect on "talent", technique, and brain development.

Best treatment of rhythm that I have ever seen; Whitesides repeatedly emphasized the importance of rhythm, but never explained it. Rhythm is "a game of expectation" and is highly complex -- we find here the precise explanations, definitions and examples that were missing in Whitesides that tell us what rhythm is, and how to create and execute it.

Loudness is also complex; the ear compresses loudness to prevent ear damage and the brain compensates by expanding it back, so that loudness response is logarithmic, just as frequency is in the ear. The brain has the capacity to increase sensitivity in order to detect small changes -- something composers exploit to great effect. Most properties of music are not orthogonal; e.g., variations in loudness can be used to create or alter the rhythm.

Gestalt psychology, systems neuroscience, SSIR (shared syntactic integration resource), functionalism, cognitive psychology, cognitive neuroscience, etc., have been involved in brain/music analysis. Music uses practically every part of the brain - more than language and probably predates it - and much of music is concerned with producing (musical) illusions. Modern scientific methods, such as the use of MRI and fMRI, are identifying which part of the brain is involved in certain functions. "Constructionists" and "Relationists" argue about the nature of memory, but basically, the brain's memory function is still a complete mystery. Known methods of music memory are far more advanced than the

discussions in this book, another weak point.

The last section deals with effects of music from before birth, through childhood and adolescence, to sexual relationships.

This book is a strange amalgam of a musician scientist and a writer who had not completely grown out of the “intuitive” school of music.

**Macmillan, Jenny**, “Successful Practising”, Jenny Macmillan, Cambridge, 2010, 103P., excellent index, additional reading material, and references - a professional quality teaching manual.

An organized and structured textbook for learning piano, based on Project Management principles (and therefore has applicability not only to other instruments but also any project in general). A fairly comprehensive treatment of practice methods, including segmental and hands separate practice, outlining, Mental Play, performance preparation, etc. Suggestions for practice methods/planning for students, parents, and teachers.

**Neuhaus, Heinrich**, “The Art of Piano Playing”, Kahn & Averill, London, 1993, 240P., index of pianists mentioned in the book, no references.

One of the best ways to see what one type of the “Russian School of Piano” represents (the “Russian School” is quite diverse because, historically, nothing in piano was well organized). Full of detailed descriptions of how to deal with advanced technical situations that can not be found in my book. However, in order to fully appreciate the benefits and pitfalls of Neuhaus, you should read my book first, as he rarely defines anything, there is no organizational structure in the book, and is written in the “artsy” style, an intuitive approach, but mostly in a good way -- the deep culture of the Russian School has built in some protections from the most obvious pitfalls. He is aware of, and tries to answer, critics that the Russian method is all work and unfriendly to those without talent. Nonetheless, he follows the established self-serving pattern of ascribing success to talent instead of telling us how it can be done. That is, you practically have to know what it is before you can find it in the book, if at all. Although he disavows this self-serving tendency on P. 22, he keeps falling into it. Perhaps the best example of this is the claim on P. 22 that hands separate practice is only for emergencies -- what an (un-intended) endorsement of this method from one of the world’s most respected piano teachers!

He also makes fantabulous claims about what he can teach, but then follows with statements to the effect that they can’t be written down in a book. But at least, this gives hope to the reader that he is aware of those dreams and that they have been achieved. This is an improvement over sweeping everything under the talent rug. Because the book is not structured, and there is no useful index (only pianists’ names), it is nearly impossible to find discussions on any specific topic, although it is probably somewhere in the book.

I will not go into the numerous gems in this book -- there are too many of them. This is a MUST READ for serious pianists, with the reservation that it is far from a scientific approach (which some may prefer because these are the very topics artists struggle with, spoken in their own language), but is densely packed with anecdotes and pointers from a lifetime of experience at the highest level of pianism. P. 16: “As for the piano, I was left to my own devices practically from the age of twelve” in spite of the fact that both of his parents were piano teachers. Beginners reading his book may feel the same way; he was never completely freed from the intuitive approach, from his youth to his death in 1964 (and including his book); but Russian culture and dedication gained him world respect.

**Onishi, Aiko**, “PIANISM”, Anima Press, 1996, 124P., index, no references; originally published in Japanese as “Approach to Pianism”, Zen-On Press.

Tone (single note, etc.), technique, melody and harmony, interpretational expressions, exercises (stretching, lifting), learning new pieces, memory, imagery (of musical emotions), performing, teaching, pianistic analysis using Chopin, Debussy, Ravel. A compendium of correct methods by a well educated

teacher.

Has clear discussions of Thumb Over (P. 27), use of Parallel Sets for practicing trills (P.33), double thirds (P. 33), repeated notes (P. 36), etc. Very concise, but profusely illustrated with diagrams and music examples. One of few books with instructions on how to practice. She comes close to, but does not discuss Mental Play.

**Richard, Francois L.**, “Music in your head, Mental practice, how to memorize piano music”, FLR Music Resources, Texas, 2009, 30P., no index or references.

Mental Play, memorizing, ear training, chord progressions. Author is a pilot, aviation instructor, and pianist, living in the self-proclaimed Piano City, Fort Worth, TX, home of the Van Cliburn competitions. This is the first book I have found on clear step-by-step instructions on using Mental Play to memorize. Extremely brief, but concrete instructions with actual examples of music. Expensive: \$23 for a 30 page paperback.

**Taylor, Harold**, “The Pianist’s Talent”, Kahn & Averill, London, reprint 2009, 112P., no index, bibliography (20 books).

This book represents the “Alexander School of Piano” and makes fascinating reading for comparing it with other schools of piano pedagogy. I will highlight this comparison by comparing this book designated by (T) - for Taylor - with my book, designated (F) - for Fundamentals of Piano Practice. Before you read (T), you should read this review and (F); otherwise, you will miss a lot of information contained in (T) because unlike (F), (T) does not always define terms because (in my opinion) they are not totally understood or even definable -- that is the nature of the “artistic approach”. The name of the term (such as mind/muscle co-ordination) or its use in context is supposed to serve as the definition, or, as in the case of “talent”, it is discussed in an entire section without pinning it down to anything specific. Without reading (F), (T) can seem quite impressive because of its (unsubstantiated) promises and claims; however, armed with sufficient knowledge, (T) is at times a comedy of errors that can be easily exposed. Nonetheless, (T) is a time-tested, highly developed discipline and, where it is correct, it should agree with (F) if (F) is also correct, as we shall see.

My understanding is that (F) *tries* to be knowledge based [nothing can be *absolutely* knowledge based because we never know everything, which ultimately limits (F)]; (T) has no such limitation because it depends on the ability of the human brain to accidentally discover whatever is needed at the moment, and (T) is all about how to do this, see below, so that we need both (T) and (F). However, the limitation of (T) is that unless you have the right parents, teachers, circumstances, etc., such discoveries might never happen. Thus we might summarize this comparison by postulating that in the absence of knowledge, (T) is superior, but with sufficient knowledge, (F) should be better.

(T) starts by defining “Talent”. “Talent may be briefly defined as the ability to perform without training . . .” P. 14, an opinion that is now largely discredited by those who have studied this phenomenon under controlled conditions. This is confirmed by (T)’s own later assertion “The super-talent of today may well become the accepted norm of tomorrow” - which is exactly the thesis of (F) because knowledge can only increase under scientific processes. Another confirmation: “A student once asked me, ‘What has Horowitz got that I haven’t?’ The short answer is ‘Nothing!’” (T) finally comes close to a working definition of talent: “the highly talented pianist is neither a biological ‘sport’ nor the possessor of extra-human capacities, but merely an optimum example of the way in which these capacities operate when applied to piano playing.” In (F), this is succinctly stated as “Talent can be taught”, whereas (T) uses 6 pages without reaching a definitive definition.

The first half of (T) is mainly an exposition of the theory of piano learning or technique acquisition based on the concepts of “expansion” (good) vs “contraction” (bad), co-ordination, etc. I could not

understand the physical bases of these theories even after trying his examples of standing at a wall (P. 27) or trying to lift a match box (P. 31). I found practically no useful information up to P. 63; in fact there are many incorrect/outdated statements throughout the book. However, reading between the lines, I concluded that the entire methodology is based on relaxation. Such a basis can confer significant validity to the method.

The second half consists of reviews of the teachings of Raymond Thiberge; these methods eventually blossomed into the Alexander and related techniques and share many basic principles, especially relaxation. Another basic tenet is that you either make music or you don't play at all. Those who memorize and practice bar-by-bar are derisively called "end-gainers" who end up with "black-smith music" P. 17. There are too many excellent suggestions to list here, so this book is worth reading, although the correct explanations and details of execution are too often lacking.

Chapter 7 is an excellent description of how you typically start to learn this type of (Alexander, etc.) method (the first lessons). How to play octaves [add the "finger splits" discussed in (F, P. 99) which is described as a hand rotation in (T)], uses of the thumb [TO type motion in (F, P. 91) described as an arm rotation in (T)], how to avoid playing between black keys by using the thumb, importance of imaginative fingerings, etc. Technique practice is P or even pianissimo, in agreement with (F). Chopin was the most progressive teacher. Chopin's Pleyel had a very light touch and there are some doubts as to whether his teachings could be applied to today's concert grands. My reaction to this was the question of whether today's digital pianos, with their lighter touch, might have resembled the Pleyel more than today's concert grands in touch weight. (T) recommends "sight reading" which is a process similar to Mental Play in (F).

So when it comes to valid specifics, (T) and (F) come to the same conclusions; that is, (T) is also knowledge based when it comes to specific practice/technique methods. The one glaring difference between (T) and (F) is that in (T), you should never practice anything beyond your skill level. I don't know if this is true. I certainly hope not because (F) is essentially a compendium of methods for breaking the technical barriers that previous methods could not overcome. (F) is faster because you quickly acquire technique so you can play relaxed, but risk losing music, erecting speed walls, or injury. (T) plays it safe by learning relaxation first because it does not have enough knowledge to overcome all technical difficulties or avoid injuries. Clearly, the chapters/comments on relaxation in (F) are critically important, and (T) and (F) are gradually merging into one school.