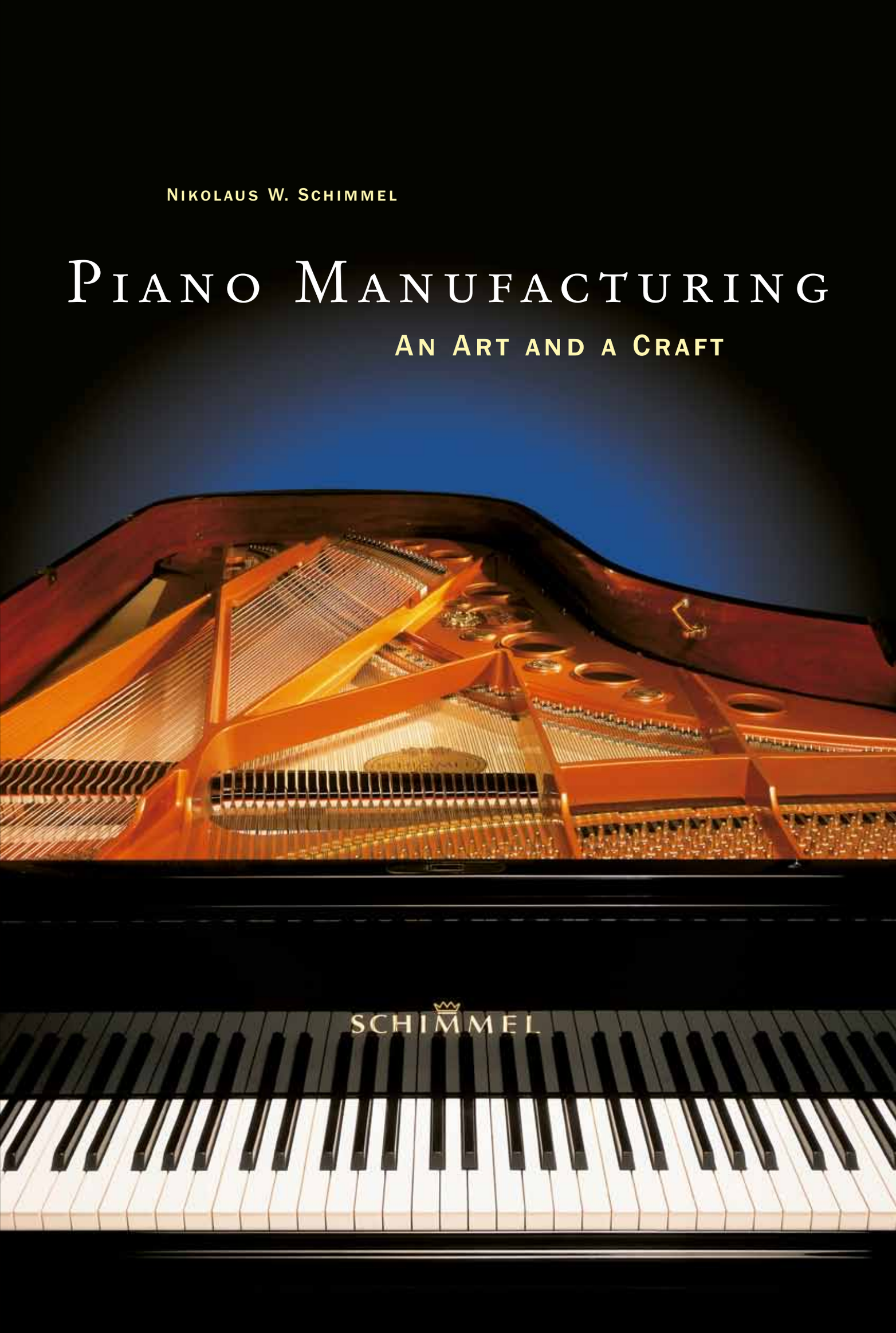
Nikolaus W. Schimmel

Piano Manufacturing

An Art and a Craft



SCHIMMEL
PIANOS

Schimmel, das sind Instrumente
mit Persönlichkeit

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Contents

Since time immemorial, music has accompanied mankind. The earliest instrumentological finds date back 50,000 years. The first known musical instrument with fibers under tension serving as strings and a resonator is the stick zither. From this small beginning, a vast array of plucked and struck stringed instruments evolved, eventually resulting in the first stringed keyboard instruments.

With the invention of the hammer harpsichord (*gravicembalo col piano e forte*, "harpsichord with *piano* and *forte*", *i.e.* with the capability of dynamic modulation) in Italy by Bartolomeo Cristofori toward the beginning of the eighteenth century, the pianoforte was born, which over the following centuries evolved into the most versitile and widely disseminated musical instrument of all time. This was possible only in the context of the high level of development of artistry and craftsmanship worldwide, particularly in the German-speaking part of Europe.

Since 1885, the Schimmel family has belonged to a circle of German manufacturers preserving the traditional art and craft of piano building, advancing it to ever greater perfection. Today Schimmel ranks first among the resident German piano manufacturers still owned and operated by the original founding family, now in its fourth generation. Schimmel pianos enjoy an excellent reputation worldwide.

This booklet, now in its completely revised and updated eighth edition, was first published in 1985 on the occasion of the centennial of Wilhelm Schimmel, Pianofortefabrik GmbH. Its intent and purpose is to provide customers, guests and friends of our family business with an insight into the history of the piano and its predecessors and of our company, as well as familiarizing people with piano manufacturing as an art and a craft.

Hannes Schimmel-Vogel

Hannes M. Schimmel-Vogel,
Braunschweig, 2015

The Fascination of the Piano

I would like to begin with a few remarks concerning joy – or to be more precise – the joy of playing music. This booklet is devoted to piano manufacturing. Without claiming to be a complete treatise, it recounts the highlights of the story of how music came to be. In particular, it conveys something of the fascinating three-hundred-year history of the piano and its predecessors and how, since the early eighteenth century, innumerable talented and inventive piano builders, in both small and large steps, continually advanced the technical features, the sound, and the appearance of their instruments. Modern-day upright and grand pianos, instruments such as are being produced today by Schimmel and other piano manufacturing concerns of international renown, are the direct culmination of an extensive history of research and design.

The reader will also learn how a piano is manufactured in carefully planned work operations and how precisely its keyboard and action assembly must function in order for the instrument to fully meet all demands placed on it by the pianist, whether for classical music in the concert hall, in show orchestras or jazz bands, in the highly diversified world of pop music, for playing music at home for one's own pleasure, or for social occasions.

All things considered, there are many different ways to make music, as many as there are musical instruments and temperaments, and there is no accounting for tastes. We should not deny ourselves the pleasure of playing a musical instrument and playing the piano, with its harmonious sonority, it is perhaps the most delightful, or at least one of the most comprehensive ways of entering the world of music. Moreover, one can entrust oneself to the piano, with all one's feelings, thoughts, and moods, as did the great composers of the Classical and Romantic periods, including many women, such as Fanny Mendelssohn and Clara Schumann-Wieck. They all left us works in which they have, beyond all formal principles, entered into a perpetual dialogue of feelings with us.

Like composers who have ascribed their innermost thoughts and feelings to the piano, the instrument remains – for everyone who knows how to play it – an effective and distinct medium for communication. Perfection in playing is not necessarily paramount, nor is the origin or style of the music all that important. The piano proves itself to be a true all-purpose instrument capable of communicating emotions and turning sadness to joy.

Joy is the true mainspring of playing music. Those who cannot experience the joy of playing music are better off not touching a piano – or, for that matter, any other musical instrument. Joy transcends rhetorical description and can be expressed in so many ways. It is a wonderful feeling that keeps us going, that makes us happy. Much smarter people than I have pondered the concept of joy and why one experiences joy so intensely when playing music.

The Millenium Concert on May 27, 2000 was a highlight of the 2000 concert series of the Brunswick Chamber Music Podium. This concert, held in the Brunswick Municipal Hall, and for which Schimmel supplied 100 new Millenium grands and uprights, was attended by over 4,000 persons.




The concert program was unique, and included works by Bach, Mozart, Rossini, Ravel, Orff, Gottschalk and Rachmaninov.



Schimmel promotes the younger generation of pianists in many different ways, including granting scholarships, sponsoring competitions and benefit concerts, donating prizes etc.
The photos show scenes from the concluding concert of the Gina Bachauer Young Artists International Piano Competition (1997, Salt Lake City, Utah, U.S.A.).

Every attempt at definition gets bogged down in approximations, because each individual experiences joy differently. But perhaps we could put it this way: Joy is the opposite of fun, of action or events, or whatever term might be in current use. Joy comes from deep inside. One could almost say – at least with reference to playing music – we create it ourselves, because there is scarcely any other art form that appeals to us as directly as does music. Whereas, fun comes from an outside source. It is brought to us.

To be sure, the above anaology does not tell the whole story. It can only be a part of the truth. Music, too, is brought to us. Not everyone can play music, but anyone can develop an appreciation for it, become spellbound by it, and experience an ineffable joy listening to it. With regard to enjoying listening to music, I would like to relate a brief personal experience which I shall always remember.

It must have been 1956 or 1957. I was waiting for my teacher in a room of the conservatory where I was studying. It was quiet in the high-ceilinged room of the former lordly villa. Suddenly I heard someone playing the piano in the room next to mine. A passage from the first movement of Mozart's Piano Concerto in D Minor. Then another passage. Later, an excerpt from the middle movement, the romance. Someone was practicing. But who? I had never heard anyone play so perfectly. Certainly not among my fellow pupils or even among the teachers. I was unable to get up the courage to open the door of the adjoining room, so I stood there and listened to the music, damped somewhat by the wall. Not until that evening, in the concert hall, did I learn from one of the other pupils who had been practicing. It was Clara Haskil, perhaps the greatest twentieth century interpreter of Mozart.

Before Clara Haskil died in an accident in 1960, I had the opportunity to hear her play Mozart in a concert. This Romanian pianist, at that time not yet so old, but frail looking because of past illness and tragedy, hunched over the keys. It was one of those rare concert hall occasions when one finds oneself sitting on the edge of one's chair… breathless. Suddenly everything becomes a single unit – orchestra and audience – completely spellbound by the playing of this woman. And there it was – this joy of just being able to listen. Perfect playing technique. Perfect Mozart. A joy that has remained with me to this day. I subsequently heard many prominent, even great, pianists, but that experience, listening through the wall and attending that concert that evening were my unforgettable personal encounter with the piano.

Instrumentalists have personal encounters with their respective instruments, but everyone can have a personal encounter with music. The piano offers a unique musical experience to the pianist. And each encounter with music is valuable, whether one wishes to have a professional career as a pianist or simply play the piano for personal pleasure. I never personally met a pianist who was of the opinion that learning to play the piano was a waste of time and effort. Wasted time? Wasted youth? On the contrary – the joy of playing lasts forever. Even to the amateur – in the positive sense of the word – playing the piano offers a delightful way of retreating to the world of music. For some, playing the piano is a way to come out of one's shell and become the life of the party, bringing the 88 black and white keys to life!

Naturally, it helps when learning to play the piano – as with other musical instruments – to start young. However, many who have begun piano lessons as adults have made remarkable progress and achievement. Nevertheless, it is a fact of life that doors seem to open, and talents seem to be nurtured, better during the formative years. The joy of playing music as a youngster should be the very pedagogical essence of music lessons. And the child's first musical success can be the experience that provides encouragement, confidence, and lasting joy.

Anyone who has ever attended a *Jugend musiziert* Concert (the annually held nationwide competition of young musicians in Germany) and experienced the intensity and earnestness, but also the playful joy, with which contestants have mastered their pieces knows that this definitely cannot be referred to as "wasted youth", but rather as fulfilled youth. It is perhaps no wonder that at German music schools the piano continues to be the most popular instrument. Learning to play music helps the pupil get more out of life than just the ability to find the right note at the right moment. It expands one's mental horizon and opens doors. Playing music together with others can result in friendships which often last a lifetime. Individuals who get into music early in life (Albert Einstein is a good example) tend to be more focused on life's realities. They tend to have a wide range of interests – even if one later chooses a profession that has nothing to do with music. As Friedrich Nietzsche once said, "without music life would be an error".

About three hundred years ago the first known pianoforte saw the light of day. Down through the centuries it has evolved to ever greater perfection, and it has remained ever young. It has bucked competition from the grammophon and radio, TV and electronic keyboard instruments. Because just as music composed for the piano never goes out of style, neither does the piano itself. Its sound can be imitated digitally to a certain extent, but never its warmth, its fullness, its beauty, its power and the soul of the sound created by the pianist.

Piano music has never lost its diversity. In fact, just over the past century its spectrum has been greatly expanded by the likes of jazz pianists such as Duke Ellington, Nat King Cole and Oscar Peterson, or of the scintillating pop pianist Chic Corea, who is completely at home in all styles, or of the nonconformist Friedrich Gulda brilliantly performing Mozart's Concerto in E Flat Major for two pianos. This list could be expanded to include all the great pianists and virtuosos of the past and the present.

Music knows no frontiers. It is bound neither to style and prevailing tastes nor to ethnic or national preferences. Musicians differentiate only between good and bad. Music must rouse sentiments, must have an aura, must possess spirit, wit, charm and, above all, stature. Among the convincing examples of how music alternates between the worlds of sound of yesterday and today are the "Jazz Meets Classic" concerts of the pianists Ratko Delorko and Christoph Spendel.

This musical diversity is reflected in the photo to the left, in which the "classic" insides of a Schimmel grand contrast with a fanciful modern-art cabinet created by the renowned painter and sculptor Otmar Alt. Schimmel has exceeded the bounds of traditional piano manufacturing with completely new design features.

It is a fact of life that piano sound, in association with great virtuosos since the early nineteenth century, continues to radiate its unbroken fascination. One needs only read Heinrich Heine's reports on the cultural life of Paris in the 1840's in the *Augsburger Allgemeine Zeitung*, how he deals with the piano virtuosos of his time with wonderment and irony. For example, Franz Liszt, "…the genius, who is again giving concerts here, which exert a magic that borders on the fantastic. All pianists pale in comparison with him – with one exception, Chopin, the Raffael of the fortepiano", to whom he refers elsewhere as the "charming tone poet". Heine even refers to Liszt's competitor Sigismund Thalberg as a "musical gentleman".

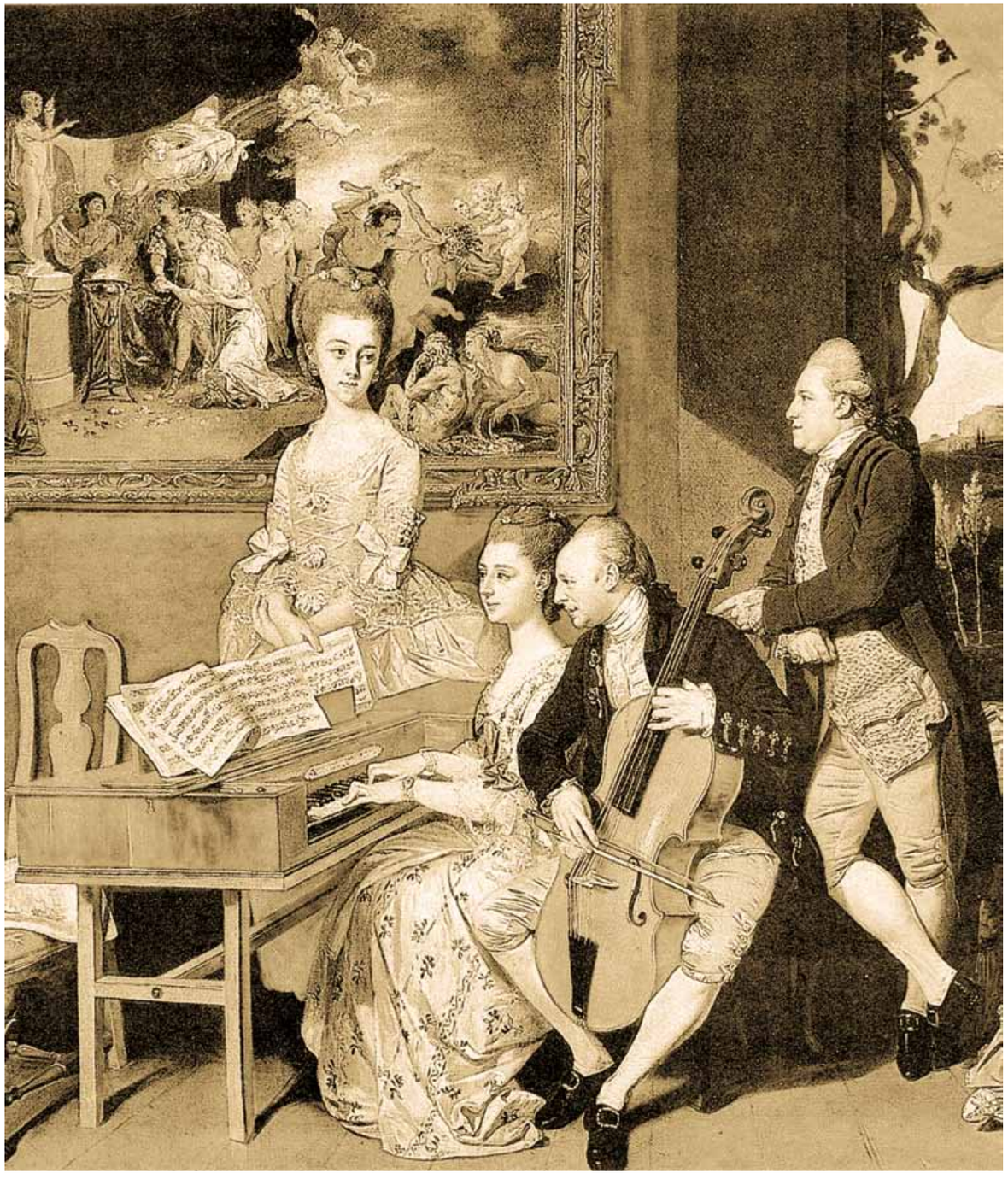
"With Liszt, on the other hand…", writes Heine, "… one no longer thinks of difficulties to be overcome; the piano disappears, revealing music", followed by a jibe at Alexander Dreyschock (today we would say, probably unjustified). Although he reaped great applause in Paris of that time, to the ears of Heine, his playing was only a "hellish spectacle". Heine: "One is under the impression of hearing, not one pianist, Dreyschock, but three (*drei*) shock pianists. Since, on the evening of his concert, the wind was blowing in a southwesterly direction, it is entirely possible that his playing could be heard in Augsburg; at such a distance the effect would certainly have been an agreeable one". To which he adds: "Go hang yourself, Franz Liszt; you are only a wind idol in comparison with this thunder god". But this is merely a brief side excursion and an early example of how piano playing and its interpreters have always stood at the center of feuilletonistic contemplations, comparable only with virtuoso violin playing of the Paganini era.

It was the piano, and no other instrument, which for almost a century dominated not only the concert halls, but the parlors and living rooms of the bourgeoisie, as well. In a time without radio and other media, the piano provided musical entertainment and education, from the sentimental "Prayer of a Virgin" to waltzes, to classical and romantic sonnets… even entire symphonies arranged for four-handed playing.

Those were the days! Nowadays, those who – particularly in their youth – devote themselves to playing the piano, often no longer do so because of piano lessons being imposed on them by their parents. The young Goethe, disappointed with his piano teacher, as recounted in his work *Dichtung und Wahrheit* – regretted his lack of determination in later years .

As a rule, today's young people who learn to play a musical instrument do not do so because it is expected of them by overambitious parents who desire to experience vicariously through their children what they themselves never had the opportunity to do. They are more independent. If children feel drawn to music, it is often because of an indeterminate longing, supported by parents, or because of friends or classmates who play a musical instrument, serving as role models. If talent is evident, particularly in cases where a competent teacher is able to coach and inspire, the real beauty of performing is revealed, namely, the fascination and joy of playing the piano and entering the wonderful world of music which no one has ever regretted.

Rolf Heckelsbruch,
Music Critic
Brunswick (Braunschweig), Germany



Down through the ages, the depicting of people playing music has pervaded the art of almost all people. We find it in cave paintings, in ancient Egyptian temples, in the frescos of Pompeian villas, in mediæval book miniatures, as well as in this gallant rococo scene, showing a couple playing a duet on an early square piano and a violoncello and their audience, painted in England in 1775 by Johann Joseph Edler.

The Evolution of the Piano

The Origin of Music and Stringed Instruments

It was the cattle thief Hermes

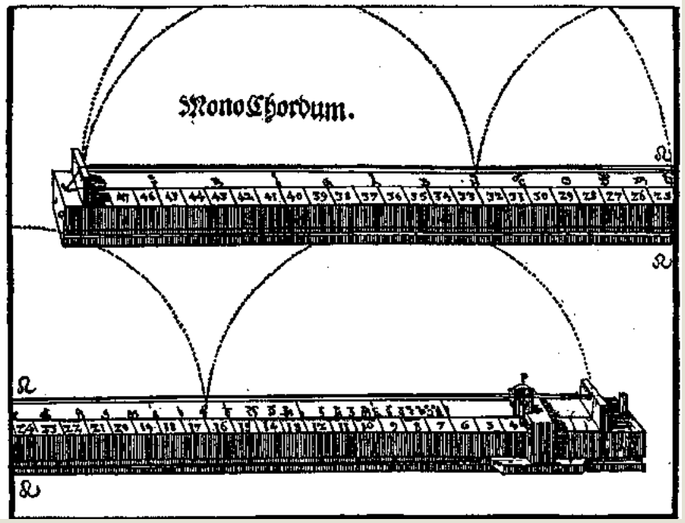
According to the earliest myths of the various peoples of the world, music was a gift from the gods. Various legends describe how mankind received and perceived this gift. One such legend is recounted by Homer, the blind poet of Greek antiquity (end of the eighth century B.C.), in his hymn to Hermes. Born in the morning as the son of Zeus and the beautiful nymph Maia, at noon he sees a turtle and forthwith constructs the first cithara from its shell. Homer reports: "Thus Hermes cut hollow reeds to measure and fastened them firmly to the skin along the backbone of the turtle. With clever comprehension he stretched cowhide over the whole thing, attached curved arms to it, connected them by means of a yoke and strung it with seven 'symphonically' tuned strings of sheep's gut. Finished was the delightful ornament. He took it and tried out each string one after the other and under his hands it resounded mightily…"

Idiophones and noisemakers

To round off the day, that evening Hermes, in short order, stole the cattle of the sun god Apollo, which not surprisingly did not jeopardize his career as the fleet-footed messenger of the gods. On the contrary – from that time on he was also the patron god of herds, merchants, and thieves. Apollo, charmed by his brother's cithara playing, forgave him.

A nice story. Yet as to how music really came into being – since Charles Darwin's Theory of the Origin of Species (1856) there have been many different theories. Experts are all in agreement that music had its origin in magic and religion and originally consisted of rhythmic noises. Yet this origin, which took place in the Stone Age, has been lost in the dawn of prehistory. Archæological finds indicate that Neanderthal man already possessed simple idiophones (*i.e.* "self-sounding" musical instruments) over 35,000 years ago: noisemakers of stone or wood and pendent rattles which did not produce musical tones but only noises. These noise-making devices helped early man ward off the demons of darkness and the evil forces of nature.

The extent to which music was originally a component of magic rites, of casting spells on animals, invoking gods before going on a hunt, and of healing and death ceremonies, can be seen in the fascinating paintings of the cave dwellers of the late Stone and early Ice Ages. They show figures wearing animal masks playing flutes fashioned from reindeer bones, as well as a musical bow. The latter – together with the stick zither with its one strip forming a "string" – are among the earliest predecessors of stringed instruments.



According to the teachings of the Pythagoreans, everything which can be perceived is numerical in its basic essence. Without numbers, there is no knowledge. All the laws governing the cosmos, including music, are ultimately based on simple numerical proportions, in which harmonía joins together the odd – namely, the one – and the even – the two – to the octave ratio 1:2, which on its part accomodates within itself the fifth, in the ratio 2:3, and the fourth, in the ratio 3:4. The remaining musical intervals are likewise derived from these basic numerical ratios.

The stars sing – on music and mathemathics

The cradle of the advanced civilizations emerging from the darkness of prehistoric times into the light of history was in fertile Mesopotamia. Wind, percussion, and stringed instruments were played in the temples and at festivals in honor of rulers. The Babylonians, Assyrians, and Egyptians likewise had hosts of musicians parading in honor of their gods, kings, and Pharaohs. The Bible (1 Chronicles 23:5) mentions four thousand Levite musicians in the service of the Tabernacle in ancient Israel during the reign of King David (1077–1037 B.C.), who himself played the harp and composed many of the Psalms, which were originally sung. Thus, the earliest known music was of a divine and cosmic nature. It was in ancient Greece that it rose above legends and myths and a theory of music based on mathematics saw the light of day. Using the monochord, Pythagoras of Samos (c. 570–480 B.C.), supposedly claimed that everything is numerical in its basic essence. He determined whole-number ratios of just musical intervals, upon which he developed an esoteric doctrine of an all-encompassing harmony of worlds, referred to as the "music of the spheres". Pythagoras and his disciples kept such theories secret, passed on only by word of mouth, out of fear of a conservative backlash on the part of the religious establishment, in whose view these newfangled astronomers, with their heresy that the heavenly bodies were not gods and goddesses but inanimate objects, represented a threat to religion, and hence their authority and power over the people.

The word αρμονια (*harmonía*), in ancient Greece, meant much more than the modern English word *harmony*. It meant the "joining [together]" of everything in the universe – mathematically and scientifically. It is in this sense that the word is used by the philosopher Archytas of Tarentum (c. 430–345 B.C.), a friend of Plato, for whom music, together with astronomy, geometry and arithmetic, formed the classical *quadrivium*. These four disciplines, plus the *trivium* – grammar, dialectics and rhetoric – together made up the seven *ars liberales*, or liberal arts (*i.e.* the disciplines that could be studied by free men).

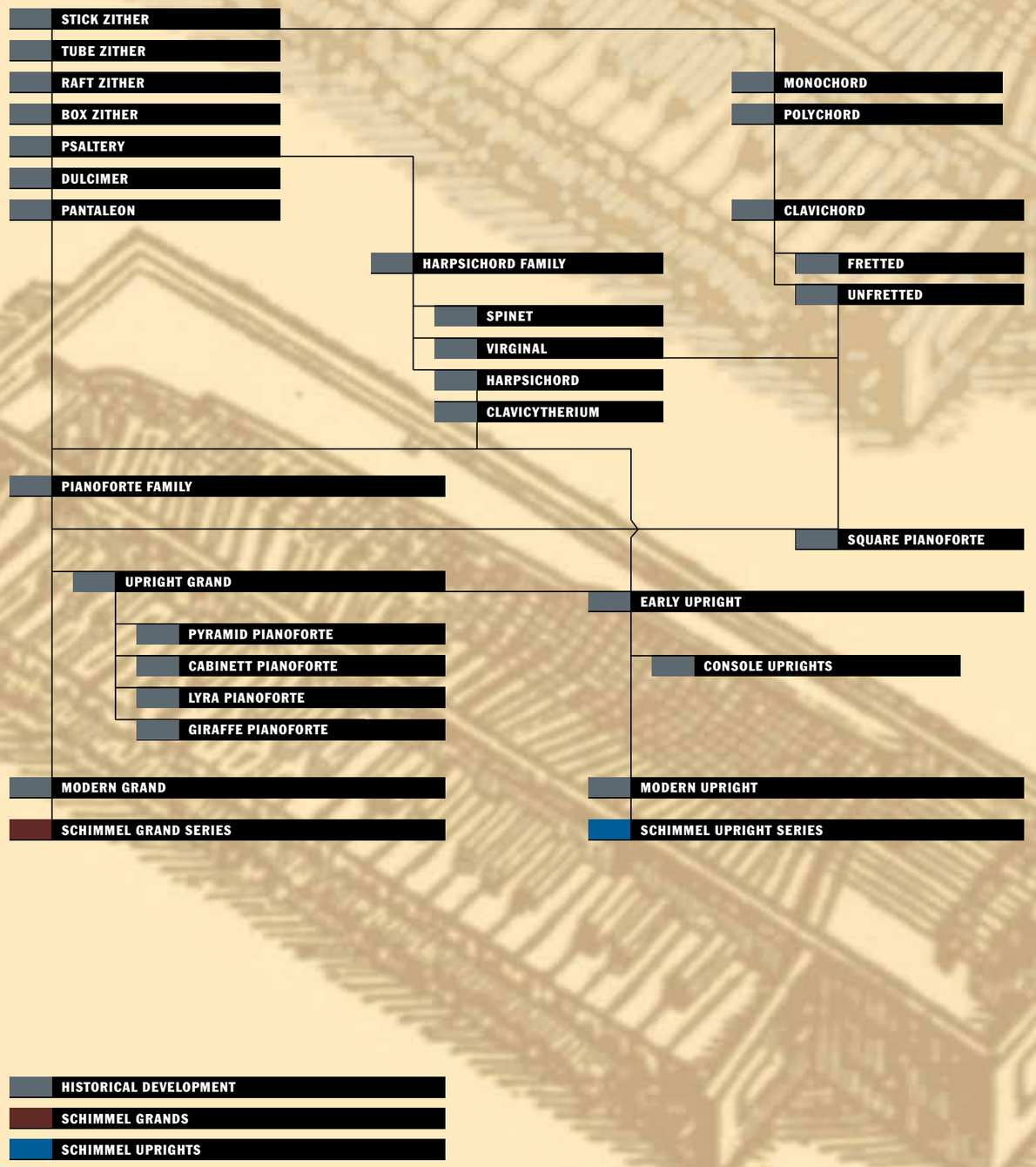
Archytas writes in lofty words of the "excellent knowledge…concerning the nature of the cosmos" achieved by the mathematicians. He praises their detailed knowledge of the nature of things, on the speed of movement of the stars and their rising and setting, and their clear understanding of geometry, arithmetic "…and not least of music as well." Because, according to Archytas, "These sciences seem to be kindred. After all, they deal with the two kindred original forms of being, namely, number and quantity."

Music which cannot be heard – music in classical antiquity

Musica mundana, musica humana and *musica instrumentalis* – these form the tristellar constellation of the conception of music in the period of classical antiquity. The first two cannot be heard. *Musica mundana* was the "exalted music of the spheres,": the numerical harmony of the macrocosm as reflected in the movement of heavenly bodies, the regular succession of the seasons, and the order of the four elements: fire, water, air and earth. As late as the time of the astronomer Johannes Kepler (1571–1630), the laws set up by Pythagoras concerning the harmony of the music of the spheres were still considered valid. *Musica humana*, on the other hand, expressed the harmony of the human microcosm with its interaction between the body and soul, temperaments and mental powers. The only type of music perceivable by the human ear was the *musica instrumentalis*, heard in the great Greek tragedies and at the Olympic singing competitions.

This tripartite view of music was so prominent that for centuries it remained a required part of the liberal arts curriculum at the universities of mediæval Europe, using as textbooks the writings of Augustine, Boethius, and Isodor of Seville. Mastering the seven liberal arts was a prerequisite for studying the higher faculties: theology, medicine, and law.

From the Stick Zither to the Piano



Early Stringed Instruments – Plucked Wood

The stick zither

The first known forerunner of the zither had only one "string". The stick zither, seen in ancient cave paintings, was still in use among primitive tribes until only a few decades ago. It was made of bamboo cane. Two parallel cuts in the surface resulted in a narrow strip of bamboo with both ends still attached. A small wooden peg was then inserted under each end of the strip, raising the latter and at the same time placing it under tension. A musical tone was produced by plucking a strip. The stick zither seems to have been invented more than once, at different places and at different times, independent of each other.

The tube, box and raft zithers

The stick zither was followed by the tube zither. A clever prehistoric musician probably hit on the idea of making a piece of bamboo cane with multiple strips of different lengths so that he could invoke the gods with various different pitches – a giant leap forward in the evolution of the zither.

The third type of primitive zither was the raft zither. Hats off to this remarkably versatile instrument and its anonymous inventor, who was not satisfied with just one stick zither, but lashed several together, tuned to different pitches, in the form of a raft. An early masterpiece of musical-instrument making. The evolution of the stick zither to the raft zither seems to have taken place over a period of a few thousand years, about to the end of the late Stone Age. But what did time mean in those days?

The zither – the vogue instrument

The zither remained popular throughout the ancient advanced civilizations of Mesopotamia, Egypt, Syria, and Egypt at least until the dawn of the Bronze and Iron Ages, having by this time evolved to its board and box forms. Harmoniously tuned strings of gut or sinews, which had in the meantime replaced wooden strips, along with a decorated soundboard or sound box, resulted in a vastly improved sound. Independent of Western developments and influence, musical culture evolved to a high standard in India, Japan and ancient China. In the Middle Empire, the birthplace of the curved board zither, among other musical instruments, music was "the standard for heaven and earth, the principle of equilibrium and harmony". The gods had not limited their gift to any particular part of the world, race, or religion, but only to the creativity and imagination of mankind.

The aristocratic psaltery

During the course of history, two lines of developments led to the instruments of the harpsichord family and eventually to the pianoforte. The first line included the zither, along with the psaltery and the dulcimer, which evolved from the zither family. The book miniatures of the Middle Ages contain illustrations of tapestries and paintings of angels playing the psaltery, whether to the glory of God and man, for their own pleasure, or for a party. The frame zither was brought to Western Europe from Arabia around the eighth century and remained in vogue until the seventeenth century. Plucked with the fingers or with a plectrum, its strings of gut or metal produced a distinctive sound and instrument makers of the Renaissance and Baroque periods were busy making exquisite and highly ornamental psalteries.

The rustic dulcimer

The psaltery was played almost exclusively by the ecclesiastical, aristocratic, or upper-middle-class, whereas its cousin, the dulcimer, became more and more the preferred instrument of the simple country folk. Despite the fact that Michael Praetorius (1571–1621) composed some charming courtly dance movements for it, as early as the sixteenth century the dulcimer was classified as an *instrumentum ignoble*. Yet the dulcimer, down to this day a prominent feature of Alpine folk music, is important insofar as its strings are not plucked, but struck with two small hand-held beaters. The dulcimer did not lead directly to the pianoforte; there was an intermediate stage – the instruments of the harpsichord family: the spinet, the virginal and the harpsichord.

The monochord – music and arithmetic meet

The second line of development, likewise starting with the stick zither, led from the above-mentioned monochord via the polychord and clavichord to the pianoforte. However, the two lines had to converge around the end of the seventeenth century in the form of the ingenious harpsichord builder Bartolomeo Cristofori (1655–1731), the father of modern piano manufacturing.

The monochord was used by Pythagoras in contriving his laws concerning the music of the spheres, and as an indispensible teaching aid of the mediæval music masters. It consisted of a resonator and a single string under tension with a stationary bridge at each end and a movable one in between. The movable bridge enabled the string to be divided into various different speaking lengths, representing the just interval ratios. The ratio 2:1 produced the octave, the ratio 3:2 produced the fifth, the ratio 4:3 produced the fourth and so on until we finally arrive at 9:8, the ratio for the major second, or whole tone. Conversely, numbers could be expressed as tones. Music and arithmetic met. The problem with the monochord was that it was poorly suited for making music.

The polychord

The polychord, similar in construction to the monochord, but with multiple strings of different pitches, was much better suited for music making. Not only could it be used to demonstrate interval ratios, but in the Middle Ages it was, in addition, used for teaching harmony and became a popular musical instrument, for which polyphonic compositions were written.

Stick zither

Tube zither

Raft zither

Curved-board zither (China)

Monochord (Germanisches Nationalmuseum, Nuremberg)

As late as the eleventh century, music theorists such as Guido of Arezzo were instructing their pupils to learn the basic tonal relationships and interval and numerical ratios on the monochord, thus verifying in a pointed manner its function as a measuring instrument and demonstration apparatus.

Dulcimer (Städtisches Museum, Brunswick)

Unfretted clavichord by Johann Heinrich Silbermann, Strassburg, c. 1775 (Musikinstrumenten-Museum, Berlin)

Fretted clavichord, Flanders, seventeenth century (Musikinstrumenten-Museum, Berlin)

Cembalo by Johann Christoph Fleischer, Hamburg, 1710 (Musikinstrumenten-Museum, Berlin)

The clavichord – pointing the way to the pianoforte

It is not clear exactly when or by whom the first clavichord was built, paving the way for mechanical sounding of strings. The first historical reference to the clavichord occurs in the Canon of Minden and Minnesinger Eberhard von Cersne in his rhymed allegory *Der Minne Regel*, written sometime after 1404. None of these early instruments have survived. The earliest clavichord still in existence today is one by Doménico da Pasaro from the year 1543.

What, then, makes the clavichord so significant in the long evolution of the pianoforte? It is the link between the instruments in which strings are mechanically energized by direct plucking or striking. The playing mechanism of the clavichord was actually quite simple. Yet this flat keyboard instrument could be conveniently laid on a table for playing, and was already pointing the way to the development of the stringed keyboard instruments. The clavichord key, when depressed, raises the tangent (a small upward-pointing metal wedge attached to the opposite end of the key), pressing the tangent against the string. Unlike the movable bridge of the monochord, the tangent performs the dual function of setting the string into vibration and serving as one of the string terminations. The non-speaking segment of the string is damped off with felt. The tangent remains in contact with the string for the entire duration of the sound, which means that the player can produce a vibrato by varying the finger pressure, while holding the key down. Since the clavichord was so subtle and expressive, it remained popular for several centuries.

Fretted and unfretted

The clavichord existed in two versions: fretted and unfretted. The earliest clavichords were fretted, a term borrowed from lutemaking, meaning that one and the same string was assigned to more than one key. The advantages of this design – simplicity and low cost – were offset by the disadvantage that it was not possible to play all combinations of notes, precluding certain chords and chord progressions.

This problem was later solved by the unfretted clavichord, in which each key had its own string(s), so that complicated chromatic chord progressions were possible. Some unfretted clavichords had two- and three-string unisons, *i.e.* two or three strings per note. As a rule, such instruments produced a sound which was richer in overtones and more expressive, although not much louder, than the fretted ones with one string per note.

The Harpsichord Family of Instruments

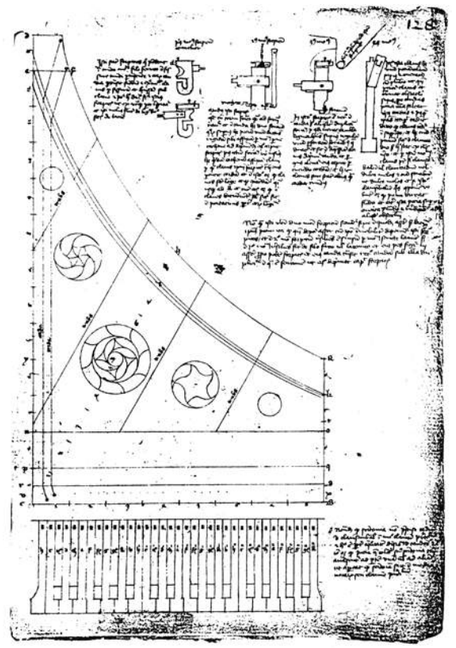
The death of many ravens – the mechanization of plucking

Music which was written for the three noble instruments of the harpsichord family, the harpsichord, the spinet and the virginal, was virtually infinite in its diversity and beauty. It spanned the "Golden Epochs", such as that of Elizabethan England, Spain, the Netherlands, France, and Germany up to the height of the Baroque period. Composers who wrote for the clavichord include, but are not limited to, William Byrd, John Bull, Orlando Gibbons, Girolamo Frescobaldi, Antonio de Cabazon, Jean Philippe Rameau, François and Louis Couperin, Jan Pieterszon Sweelinck, Arnold Schlick, and of course the grand masters, Bach and Händel.

The monochord was the forerunner of the clavichord, as the ingenious quilled-action psaltery, plucked with a plectrum, was to the noble harpsichord, spinet and virginal. Many a raven had to lose its feathers to the harpsichord builders of the era. A leather or raven quill plectrum was attached to a wooden "jack" which was attached at the back end of each key. The jack was designed so that the quill would pluck the string only on the upstroke, when the key was depressed, not on the downstroke (release). In rest position, a felt damper mounted to the jack would damp the string. In other words, the psaltery had been mechanized.

A silvery sound – the harpsichord

Surprisingly, the clavichord remained popular and continued to be built long after the advent of the instruments of the harpsichord family. The silvery sound of a harpsichord (Italian: *clavicembalo*, French: *clavecin*, German: *Cembalo*) in comparison to the genteel sound of a clavichord, is appreciably louder. Yet the clavichord possessed an advantage over the harpsichord: the capability of dynamic modulation, resulting in a sound with more life to it. Unlike the clavichord, volume could not be controlled by the amount of finger pressure applied to the key. The harpsichord string was plucked, not struck. Attempts were made to offset this disadvantage by adding more than one string per note, octave couplers (16', 8', 4', 2'), a lute stop, and more than one manual. Nevertheless, the sonority of each individual string remained invariable.



Construction drawing for a harpsichord by Heinrich Arnold von Zwolle

Spinet by Annibale Rossi, 1577 (Victoria and Albert Museum, London). The spinet is the smaller member of the harpsichord family of instruments. Its name is derived from the Latin word spina.

Spinet by Doménico da Pesaro, Venice, middle of the sixtenth century (Musikinstrumenten-Museum, Berlin)

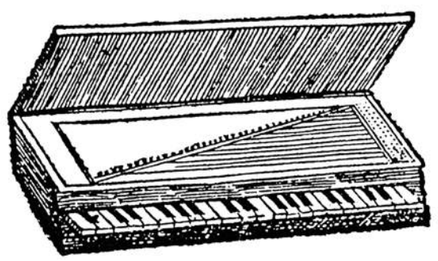
The virginal – virginal or not?

The virginal, in its era (sixteenth and seventeenth centuries), often referred to as "a paire of virgynalles", was a small, rectangular, legless harpsichord with one string per note, the strings running parallel to the keys. It was played on a table or on the lap. Its first known mention in writing ("virginale dictum quod uti virgo dulcorat mitibus et suavissimis vocibus") is in a tract by Paulirinus of Prague, written around 1406. The etymologies of all English dictionaries derive the name *virginal* from Latin *virginalis*, the adjective form of *virgo*, "virgin, maiden", some adding that this is probably because the instrument was customarily played by girls and young women. Contemporary paintings depicting musical performances show it being played by young women, men preferring the lute and viola da gamba.

In his contribution to the book *Der Piano- und Flügelbau*, Hanns Neupert, author and leading German manufacturer of historic keyboard instruments, suggested a different derivation – from *virga*, "twig", having reference to the jacks. He later emended this in a footnote in his book *Das Cembalo* (English translation: *Harpsichord Manual*), quoting from a letter from a reader, Prof. Kuen, Professor of Romance Languages at the University of Erlangen. According to Prof. Kuen's explanation of the rules of Latin grammar, the only possible derivation of *virginal* is from *virgo*. Latin *virga* would have resulted, not in *virginal*, but in *virgula* or *virgule* in English. He adds that the above quotation from Paulirinus seems to indicate that the name *virginal* originally had reference to the "feminine" voice of the instrument, as opposed to the "masculine" voices of the organs of that time: the portative, the positiv and the regal.

The spinet

Of the three instruments of the harpsichord family, the spinet (its name being derived from Latin *spina*, "thorn, quill") most resembled the clavichord. Usually smaller than the virginal or harpsichord, it was made in two versions: one with legs and one legless. It was either rectangular or pentagonal in shape and, unlike the harpshichord, had its keyboard located on its long side. Like the clavichord, its strings were arranged diagonally because of space restrictions. Its sound was as delicate as its construction and is hardly likely to have disturbed the neighbors.



Virginal, contemporary drawing

Grand pianoforte by Bartolomeo Cristofori, Florence, 1720 (Metromolitan Museum of Art, New York)

The Piano Family of Instruments

A super dulcimer – the Pantaleon

The two lines of development – one via the zithers and one via the mono- and clavichord – finally converged and resulted in the development of the pianoforte. However, there was another predecessor: an exotic instrument called the Pantaleon, a "super dulcimer", which was invented by the German violinist Pantaleon Hebenstreit. Accompanying him on concert tours starting in 1690, Hebenstreit provided his instrument with 5 octaves, two soundboards and 186 strings of gut and metal for a mellow or bright sound. There were sometimes as many as five strings per note, which he played with two-faced leather hammers rather than beaters, the one face hard and the other soft, for *forte* and *piano*. Like the later pianoforte, the Pantaleon had dampers and a sustaining pedal. Hebenstreit attained such great proficiency on the instrument – the name "Pantaleon", being suggested by King Louis XIV – that he was able to earn a better living with it than he had playing the violin. Following his death in 1750, the Pantaleon vanished from the concert scene. It experienced a brief comeback during the early Classical period, but it stood no chance against the competition from the pianoforte. Only the cimbalom, similar to the Pantaleon in construction and sound, survived in Gypsy orchestras and *inter alia* in compositions by Zoltán Kodály and Igor Stravinsky.

The first pianoforte

Success has many fathers, as the old saying goes. And, of course, many good and clever musical- instrument makers made their contributions to the invention of the pianoforte. For example, Arnauld von Zwolle († 1466), who experimented with a hammer action as early as the late Middle Ages. They all pondered on how to impart to the clear, but invariable, sound of the harpsichord the capability of dynamic modulation. But in the end, the efforts of only one individual were crowned with success: Bartolomeo Cristofori – our man at the converging point of the two lines of development.

"Famously executed"

Cristofori, born in 1655 in Padua, came to Florence as a musical-instrument maker in 1690. On a nasty, cold day in March of the year 1698, he had a chance encounter with the organist and composer Francésco Marìa Mannucci, who at the time was working in Bologna and Florence, in front of the San Lorènzo Church. Bursting with pride, Cristofori showed him a model of a new type of action for a harpsichord that struck the strings rather than plucking them. In this week before Palm Sunday, probably no one was aware that the world stood at the dawn of a new era in the history of music. Although Cristofori was harpsichord builder to the Florentine Court and curator of the de Medici musical instrument collection, it took two more years before he was able to present his ingeniously designed hammer-action instrument to his patron, Prince Ferdinando de Medici.

The first known documentation of this is an entry dated 1700 in the inventory book of the de Medici musical-instrument collection in Florence. But it was not until 1725 that the Hamburg music critic and composer Johann Mattheson, who otherwise was all ears for every new sound, published a report on Cristofori's invention in his magazine *Critica musica*, after having read the translation by Ulrich Koenig (Dresden, Germany) of an article published in 1711 and 1719 by the Italian marchese Scipione Maffei in his *Giornale dei litterati d'Italia*.

Following a flowery introduction, Maffei first laments that the harpsichord had hitherto been "entirely deprived" of the possibility of increasing and decreasing the volume of sound, as can be done with bowed stringed instruments, "and it would be viewed as conceit if anyone

Johann Sebastian Bach played on the new grand pianoforte by Johann Heinrich Silbermann for King Frederick II of Prussia.

Wolfgang Amadeus Mozart was among the first to recognize the musical potential of the new grand pianofortes. This painting by M. B. Olivier (1764) shows him in the salon of Prince Conti.

Grand pianoforte by Johann Heinrich Silbermann, Strasbourg, c. 1776. Reproduction by master piano builder Matthias König, with the assistance of Thomas Belz and Werner Albrecht, 1985.

Grand pianoforte by Sébastien Érard, one of the best known piano manufacturers in Paris, 1850 (left)

Grand pianoforte by Ignace (Ignaz) Pleyel, Paris, c.1870. This instrument already embodies many structural details found in modern grands. Its outward appearance likewise bears a close resemblance to that of its modern counterparts (right).

were to come up with the idea that he could manufacture such an instrument that would have this special gift." Yet "in Florence so bold an invention has been no less happily conceived than famously executed by Signore Bartolomeo Cristofori, a clavier maker in the service of the Grand Duke."

Gravicembalo col piano e forte

Although Cristofori had been promoted to curator of Prince Ferdinando's musical instrument collection, he was not altogether happy with his invention. "Copycat" builders were commonplace at the time (patent laws did not exist) and this was a source of considerable consternation for Cristofori. Cristofori built about twenty of these hammer harpsichords, which he called *gravicembali col piano e forte* ("harpsichords with *piano* and *forte*"), after which he returned to the more lucrative venture of building standard harpsichords with a quill action. The terms *pianoforte* and *fortepiano* are indeed derived from Cristofori's early eighteenth century creation. The first known occurence in writing *Piano* without *-forte* was in 1819.

It is not known whether Francésco Durante and Doménico Scarlatti, celebrated harpsichord virtuosos and composers of that day, ever played on Cristofori's pianoforte, but it is entirely possible. However, it *is* known that in 1732 the highly esteemed dilettante Lodovico Guistini, gave exact *piano* and *forte* playing instructions in his twelve pianoforte sonatas, the first composer to do so. This was one year after Cristofori's death. Nothing is known of any other such examples of keyboard pioneer spirit in Italy, so Cristofori gets the credit for producing the first practical hammer harpsichord, or pianoforte, the forerunner of the modern piano. In France, Jean Marius had developed a hammer action as early as 1716, but it never got off the ground. Likewise, the hammer actions developed in 1717 the German master Christoph Gottlieb Schröter in Dresden – in two versions, with up-and down-striking hammers – were a flop. The harpsichord remained popular throughout the Baroque era.

Silbermann's triumph

It was presumably through Mattheson's article in *Critica musica* that Cristofori's invention came to the attention of the renowned Freiberg organ and harpsichord builder Gottfried Silbermann (1683–1753). Convinced of its future, he learned everything he could about the new hammer action and, more importantly, he possessed the craftsmanship and the artistry to improve on Cristofori's design. Although Silbermann's instruments would sound somewhat metallic to today's listeners, the fate of the harpsichord was sealed and there was no stopping the evolving triumph of the pianoforte from that day forward. Silbermann was a powerful inspiration to generations of pianoforte manufacturers in Germany, and, in fact, in all of Europe.

Even though the harpsichord was dominating musical life, Silbermann's grand pianoforte was quickly gaining in popularity. King Frederick II (Frederick the Great) of Prussia ordered two at once. This was a bit odd, since Frederick, who played the flute and was an elegant composer, was more a traditionalist when it came to music. Undoubtedly the pianoforte was received with considerable enthusiasm by the king and the highly gifted musicians of his court orchestra: Carl Philipp Emanuel Bach, Franz and Georg Benda, the two Grauns, and others.

Johann Sebastian Bach did not at first, share this enthusiasm over Silbermann's instruments. During his visit in Potsdam in 1747, Frederick played the famous B-A-C-H theme "thema regium" on a Silbermann grand pianoforte, on which the Cantor of St. Thomas then improvised, later dedicating it to the King as a "musical sacrifice". To Silbermann's vexation, Bach, mockingly referred to by his sons as "the old fogy", remained true to himself and the harpsichord. It was not until almost the end of his life that he eventually showed a certain appreciation for the pianoforte, which had been undergoing continual improvements.

Stein, Mozart and Streicher

Among those contributing to the improved features of the pianoforte was the Augsburg organ and pianoforte builder Johann Andreas Stein (1728– 1792). The young Wolfgang Amadeus Mozart was in love with the sound and technical features of Stein's grand pianofortes (as well as with Stein's cousin of dubious repute). There was scarcely any other musical instrument to which Mozart entrusted so much of his innermost feelings than the pianoforte, particularly in his sonatas and concertos.

Stein produced over 700 pianofortes in his factory in Augsburg. However, like Mozart, he and much of his family were drawn to Vienna, at that time the capital of the Habsburg Empire and the music capital of Europe. Instruments from the factories of Stein and Streicher, with their highly developed dynamic-modulation capability, quickly established the excellent reputation of the "Viennese action".

The "singing" tone

What, to Cristofori's dismay, got off to a slow start, was now in demand in all of Europe – the pianoforte with its hammer action. Clever musical instrument builders everywhere devoted themselves to perfecting it. Sebastian Erhard (1752–1831), upon emigrating from Strasbourg to Paris in search of employment, Gallicized his name to Sébastien Érard and in 1777 built the first pianoforte on French soil. Because of his close connections with the French aristocracy he had to flee to London in 1792 to escape the guillotine of the French Revolution. His brother, Jean-Baptiste, who had no such connections, was able to continue running the factory in Paris. While in London, Sébastien Érard not only manufactured the first double-pedal harp, but in 1821 invented the repetition lever, which continues to be used in every modern grand piano action.

Square piano by F. Helmholz, Hanover, 1860. Helmholz was one of Germany's recognized piano manufacturers and one of the founders of the piano-manufacturing tradition of the Hanover / Brunswick / Seesen area, of which Brunswick is still a piano-manufacturing center to this day, and, since the beginning of the 1930's, the home of Wilhelm Schimmel Pianofortefabrik GmbH.

Pyramid by Christian Ernst Friederici, Gera, 1745 (Musée instrumental du Conservatoire Royal de Musique, Brussels)

Upright grand by Schimmel & Nelson, Faribault, Minnesota, 1900

Sturm und Drang – the Tafelklavier

Various designs were used for experimentation during the course of the evolution of the first pianoforte to the modern upright and grand piano. Today, many of these charming, sometimes exotic, but always interesting examples of inventive pianoforte manufacturing can be found in various public and private musical instrument collections.

One such intermediate design which occupies an important place in the history of pianoforte manufacturing is the *Tafelklavier* (later in England known as the square pianoforte). Among the first to produce such instruments in Germany was the renowned pianoforte and organ builder Christian Ernst Friederici of Gera (1709–1780), of the Silbermann School. It was on Friederici's *Tafelklaviere* that Carl Philipp Emanuel Bach played the sonatas of his *Sturm und Drang* period. Leopold Mozart wrote his more galant compositions for the pianoforte. The piano proved to be a popular instrument that enabled many a piano manufacturer from the mid-1800's to earn a good living, including such renowned firms as Steinway & Sons of New York and Helmholz of Hanover.

Very English – the square piano(forte)

Two wars were responsible for a slump in German piano manufacturing. One was the Seven Years' War (1756–1763), in which Central Germany, the center of German pianoforte manufacturing, was particularly hard hit and from which an entire generation of Silbermann pupils fled from Saxony to England, at that time an ally of Prussia. Then, in 1803, Napoléon's troops began to overrun half of Europe. People in the occupied countries had other concerns than buying pianofortes and the industry stagnated, except in England. Thanks to Saxon refugees, and later Érard, the hammer action was becoming popularized in England. It was in London that the *Tafelklavier*, which was manufactured primarily in the rectangular form of the clavichord and virginal, got its English name *square piano(forte)*.

The origin of uprights

Christian Ernst Friederici, the master from Gera, did not limit himself to the building of square pianofortes. As already Doménico dal Mela, a Cristofori trainee, Friederici designed a vertically configured grand pianoforte, the pyramid (*Pyramidenflügel*). This idea was, of course, not entirely new. In his work *Liber viginti artium*, written in 1460, the erudite Paulus Paulirinus (1413–1471) mentions the clavicytherium, a small legless upright harpsichord.

Nevertheless, the pyramid was an original invention in the sense that, unlike the clavicytherium, it had a hammer, rather than a quill action and rested on the floor instead of on a table. This was an impressive instrument. There were others: the giraffe (*Giraffenflügel*), lyra pianoforte (*Lyraflügel*), and the cabinet pianoforte (*Schrankflügel*), equipped with doors. In their outward appearance, they remained fanciful arabesques of pianoforte manufacturing, but their action mechanisms helped pave the way for the development of the upright piano.

The first upright pianofortes emerged successfully on the market after 1800; they formed the vanguard of their modern counterpart. However, the innovation was to come from England, where William Southwell introduced his cabinet pianoforte in 1807 and Robert Wornum introduced his likewise space-saving cottage pianoforte already in 1811. Small upright pianofortes were also manufactured in other countries. Jean-Henri Pape of Paris (France), who in 1828 created the "console piano", only 1 meter in height, and Wilhelm Schimmel of Leipzig (Germany), were two of several talented inventors who made important contributions to modern-day upright piano manufacturing in the nineteenth century.

Upright piano by Wilhelm Schimmel, Leipzig, 1898. His instruments found wide recognition and received coveted awards. In the 1920's, he made important contributions to the evolution of the modern piano.

Modern grand and upright pianos

Hence, it was the upright piano that pointed the way to the future. Although the square piano remained popular in the saloons of America, it gradually lost favor by the middle of the nineteenth century, when quality upright pianos, such as those from Hawkins (Philadelphia), Babcock and Chickering (Boston) and Steinway & Sons (New York) began flooding the market. Moreover, pianos were being imported from Europe, where piano manufacturing was booming as a result of numerous fledgling piano companies. However, after two World Wars and the changed market many once-famous brand names vanished from the market. In Germany only a few companies survived, among them Wilhelm Schimmel, Pianofortefabrik GmbH, founded on May 2, 1885 in Neuschönefeld near Leipzig.

Schimmel today

Today Schimmel grands and uprights rank among the top flight in the piano industry. Their excellent tonal and playing characteristics are convincing, inviting one to play on them. For decades now, Schimmel has been one of Germany's best-selling piano. This, of course, means a great responsibility to piano-manufacturing traditions.

Good reasons for the company to have as one of its corporate objectives the cultivation and preservation of traditional piano manufacturing in Germany. Schimmel attaches great importance to the qualifications of its employees. And Schimmel is one of the largest and most preferred training centers for those wanting to learn the profession of piano builder. In past decades, nearly 600 young people have successfully completed Schimmel's apprenticeship program. Many of them have gone on to complete the five-year journeymanship and pass the master-piano-builder examination. All this demonstrates the confidence which Schimmel has in the future of the traditional piano.

Contemporary 7'2" Schimmel grand of the Konzert 219 series – a superb example of the German art of piano manufacturing.

The hammer action – invented c. 1700 by Bartolomeo Cristofori – has attained a perfection in top-flight pianos that enables pianists to produce any desired nuance in sound. A perfection of which Cristofori could only dream.

The History of the Hammer Action

300 years of artistry and craftsmanship

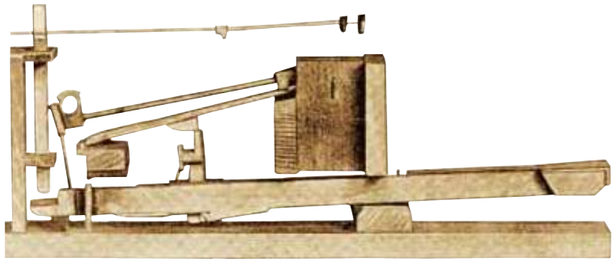
A prerequisite for a perfect piano sound is a perfectly functioning keyboard/action assembly, something on which piano builders have been working for the past three centuries, resulting today in a complex, but logical system of levers of varying lengths. The mechanical parameters have been the same since Cristofori's days: (1) to catapult a hammer against a string, or strings, and have it immediately bounce back and not "block", referred to as *letoff, set-off* or *escapement*; (2) to ensure that the hammer is caught immediately after it has bounced off the string so that it does not "stutter", referred to as *checking*; (3) to ensure that the hammer is ready for a new blow as soon as possible, referred to as *repetition*; and (4) to ensure that the slightest variations in pressure on the key result in corresponding variations in the force of the hammer blow, and hence in the volume of sound, referred to as *dynamic-modulation capability*. The perfection of grand and upright actions as we know them today is the result of over three hundred years of patience, artistry, craftsmanship and inventiveness on the part of innumerable piano builders.

Hebenstreit – hammers instead of beaters

It is impossible to write about the technical history of the hammer action without again mentioning some of the early instruments previously cited. The dulcimer, and particularly the concert dulcimer, of the virtuoso Pantaleon Hebenstreit, was the first stringed keyboard instrument equipped with hammers rather than beaters. The keyboard, with white and black keys for the naturals and sharps, resembled that of the organ, the clavichord, and the instruments of the harpsichord family. It was only a matter of time until someone would come up with the idea of providing the Pantaleon with a keyboard, *i.e.* the mechanization of the dulcimer. Similarly, the instruments of the harpsichord family and the clavichord resulted from the mechanization of the psaltery and polychord, respectively.

It was not by mere chance

Toward the end of the seventeenth century, the invention of the hammer action, like so many other inventions, was somewhat tenuous. The desire for a keyboard instrument combining the expressiveness of the clavichord with the sonority of large harpsichords was substantial among both musicians and music lovers. Bartolomeo Cristofori fulfilled this desire by providing one of his harpsichords with a hammer action. This remarkable innovation came about, not by mere chance, but because of considerable experimentation with his design over a long period of time. The illustration below of one of Cristofori's 1720 action models shows how carefully he designed his hammer action, based on the pushing principle. Cristofori lived to see the rise in popularity of the pianoforte, at first gradual, then rapid, but was hardly able to profit from it. Of all the different hammer action designs that evolved over the ensuing years, the original pushing action proved to be the most effective, although for a time there was serious competition from the bumping action.



The hammer action invented by Bartolomeo Cristofori, pushing principle, located above the keys, up-striking, hammers facing away from the player.

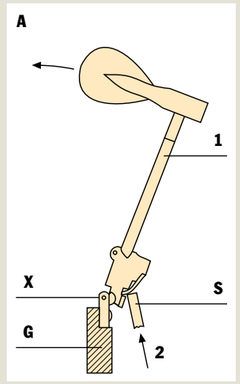
Pushing or bumping – mechanical principles

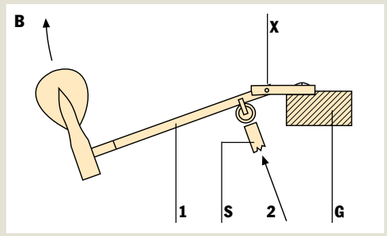
From the beginning of the eighteenth century, pianoforte manufacturers experimented with various different hammer-action designs. Of the four basic mechanical principles that were tried, only two proved successful: the pushing action (Figs. A and B) and the bumping action (Figs. C and D). The distinguishing feature of the bumping action is that the hammer pivot point moves upward when the key is depressed, whereas that of the pushing action remains in a fixed position, resulting in a more precise striking point.

The hammer action evolved along two separate lines: in a horizontal arrangement for grand and square pianofortes, and in a vertical arrangement for upright grands, such as the pyramid, and upright pianofortes. The two arrangements (vertical, horizontal) differ in the position of the hammers and in the direction in which strings are struck.

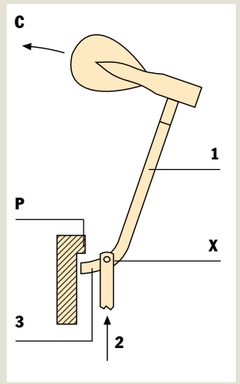
The action in vertical instruments is located above, behind, or below the keys. As a rule, the hammers move away from the player, seldom otherwise. The action in horizontal instruments is mostly located above the keys, with up-striking hammers. The hammers are either facing in the direction of the player or in the opposite direction. A handful of horizontal instruments have down-striking hammers. Their action is located behind or under the keyboard.

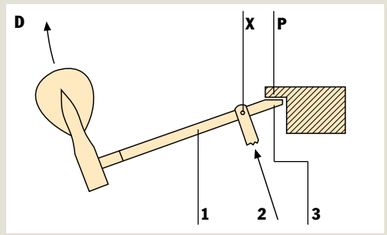
Figs. A and C show the vertical arrangement with forward-striking hammers, Figs. B and D the horizontal arrangement with up-striking hammers.





The pushing principle: The pivot point (X) of the hammer shank (1) is fixed and is located on a flange attached to a stationary rail (G) of the action. As the key is depressed, the jack (S) pushes up (2) against the hammer butt or roller, causing the hammer to move forward (Fig. A) or upward (Fig. B).





The bumping principle: The pivot point (X) of the hammer shank (1) is movable and is located on a flange attached directly to the back half of the key. As the key is depressed, the hammer pivot point (X) is raised in the direction (2), causing the hammer(-shank) tail (3) to bump up against a stationary bumper rail (P) or a movable and adjustable escapement, catapulting the hammer forward (Fig. C) or upward (Fig. D).

The pushing principle

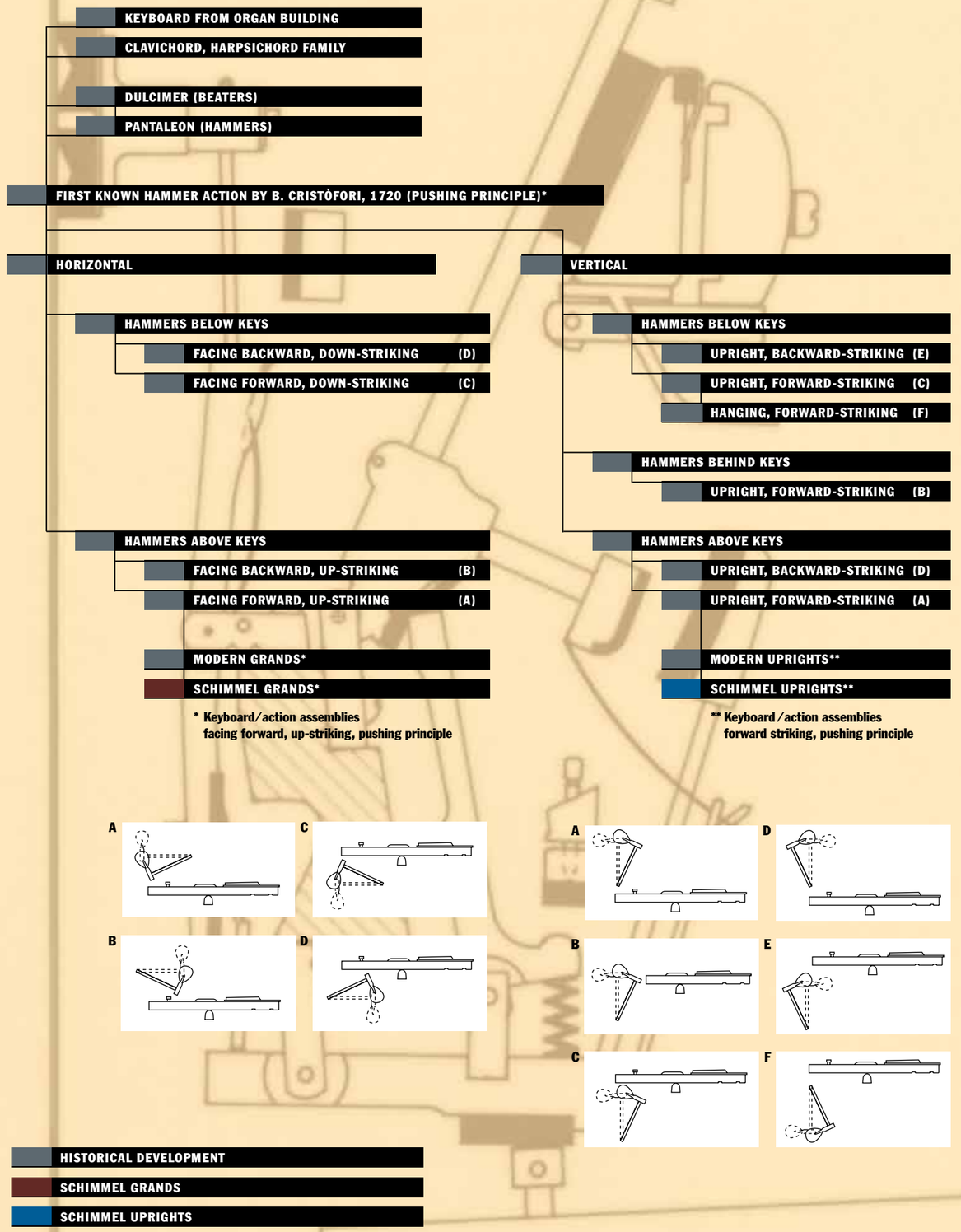
The pushing action (*Stossmechanik*), now used exclusively in modern piano manufacturing, is referred to as the "jack action". Energy from the moving key is transmitted to the hammer assembly by way of a pivoting piece called the jack. The jack action, based on the pushing princple, is also referred to as the "English action", as opposed to the "Viennese action" working on the bumping principle. Dresden musical instrument maker Christolph Gottlieb Schröter produced an early example of a down-striking pushing action with no jacks, dated approximately 1717 (see illustration, page 34). He presented his invention, in 1771, in the form of two action models (one down- and one up-striking) to the Prince Elector of Saxony, August the Strong, who had ordered them. Unfortunately, Schröter did not get his models back and nothing came of the venture. Instead, a row ensued over who had copied whom… Schröter Cristofori? Silbermann Schröter or Cristofori? Nevertheless, Silbermann, Schröter and the Frenchman Jean Marius must certainly be named as immediate successors to Cristofori among the pioneers in the development of the hammer action.

The bumping principle

The second principal action type was the bumping action (*Prellmechanik*), which was, in the early years of pianoforte manufacturing, a predominently southern German, and particularly Viennese, specialty. Thus, it became known as the "Viennese action". The hammer of the bumping action was a double-armed lever that pivoted on a flange mounted to the key, the back lever arm being referred to as the hammer(-shank) tail. As the key is depressed, the hammer pivot point is raised. The hammer(-shank) tail bumps up against either a stationary bumper rail or a movable and adjustable escapement, forcing the hammer to strike the string(s).

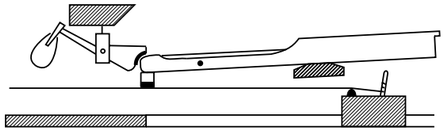
Andreas Silbermann's pupil, the aforementioned Augsburg piano builder Johannes Andreas Stein, adopted Silbermann's action but improved on it by replacing the stationary bumper rail with individual escapements, each pivoting on its own center pin and fitted with a spring which could be regulated. This resulted in a considerably improved touch. (See illustration on page 34.)

From the Simple Tangent to the Complex Action

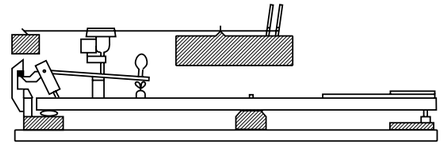


Hammer heads in an instrument by Gottfried Silbermann, c. 1745, Dresden

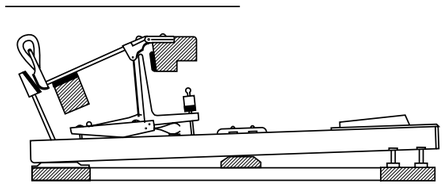
Schröter's hammer action, pushing principle, located behind the keys, down-striking hammers facing away from the player, c. 1717



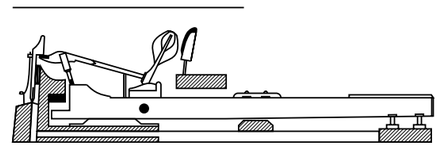
Stein's hammer action, bumping principle, located above the keys, up-striking hammers facing the player, c. 1773



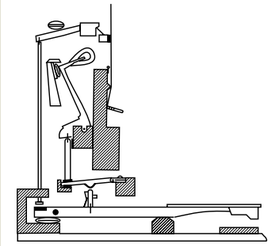
"English action", or "jack action", pushing principle, located above the keys, up-striking hammers facing away from the player



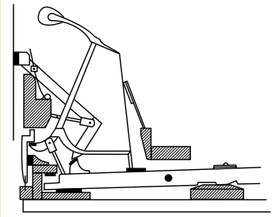
"Viennese action", bumping principle with movable and adjustable escapement, located above the keys, up-striking hammers facing the player



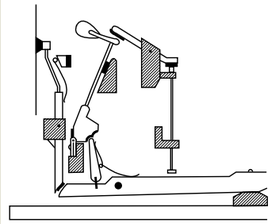
Pushing action, vertical arrangement, located behind the strings, in a pyramid by Ernst Friederici, c. 1745



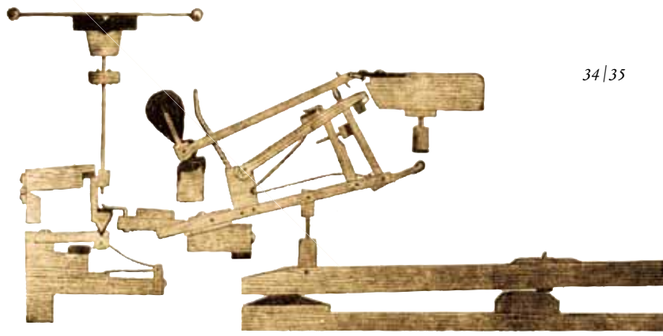
Bumping action, vertical arrangement, with individual escapement, c. 1850



Pushing action, vertical arrangement, located in front of the strings, without letoff, c. 1850



Érard's unique mécanique à double échappement for grands, horizontal arrangement, located above the keys, up-striking hammers facing away from the player, c. 1823.



The triumph of the pushing principle

There was considerable and heated debate regarding the predilection for the Viennese or English action during the Vienna Classical period (c. 1700–1827). Haydn, Mozart and Beethoven pupil Carl Czerny ("School of Velocity") found their ideal of expression in the bright, clear sound of the Viennese grand. Beethoven, who swore by his Broadwood grand, Muzio Clementi (1751–1831), and other pianists and composers of the Romantic movement, played on instruments with the English action, so called because London had become the piano manufacturing center of Europe.

Among those contributing to the evolution of the English action was the Silbermann pupil Johannes Zumpe, one of 12 German pianoforte builders who emigrated to England around 1760. It is presumed that he built the first square pianoforte there. He initially used a simple pushing action, but then made the decisive improvement of adding jacks which could be regulated, enabling letoff and a better repetition. The age of the virtuosos was quickly dawning and there was more and more demand for quick and efficient key repetition. This, in addition to the more precise hammer striking point, helped establish the eventual triumph of the English action over the Viennese action.

Transition to the modern grand action

Chopin was the dreamer and poet, Liszt the demon on the keyboard. To enable such virtuoso playing, a further improvement on the English action was needed – the repetition action. The inventor, Sébastien Érard, was, at the time, living and working in London. He added an additional lever to his grand action in 1823, called the repetition lever. The repetition lever prevented the hammer from falling back to rest position immediately following a blow by suspending it, enabling the jack to slip back under the hammer knuckle before the key's return to rest position. He called his action the *mécanique à double échappement* ("double-jack action," the repetition lever serving as an auxiliary jack).

Fast repetition wins out

Piano virtuoso and composer Henri Herz (1803–1888) made an important contribution to the industry in about 1850 by inventing the butterfly repetition spring. This improvement simplified Érard's repetition action to the extent that hammer blows repeated in the most rapid succession were now possible. Érard's *mécanique à double échappement* with the Herz repetition spring continues to this day to be the paradigm of grand piano action types.

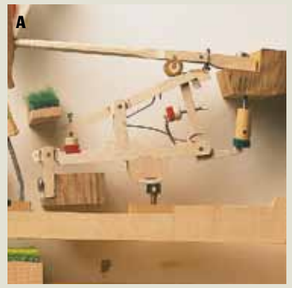
Vertical hammer actions

The first upright grand, an early forerunner of the modern upright piano, was built in 1739 by the Italian Doménico del Mela di Gagliano. The aforementioned pyramid of Christian Ernst Friederici was among the forerunners of the uprights as well. Although Cristofori's action was the predecessor of the pyramid action, this is not readily apparent because of the pyramid action's vertical configuration. The strings of the extant upright instruments were struck from in front or in back, with the dampers located above the hammers.

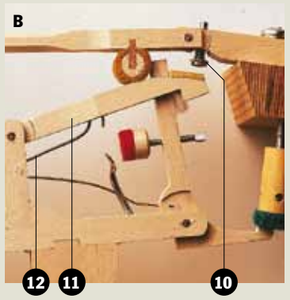
Upright grands were built until well into the twentieth century; some having unique action designs. One such upright grand was manufactured around 1900 by the American firm Schimmel & Nelson in Fairbault, Minnesota. It was built with a hanging jack action in front of the strings and underneath the keyboard. (See illustration, p. 48)

The transition to the modern upright action

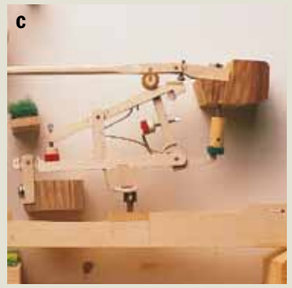
The upright, or vertical, piano rapidly grew in popularity from the year 1800. The actions were always configured vertically and were normally located above the keys. By 1850, uprights resembled, for the most part, those of today. Modern upright (and grand) actions utilize the jack action (English action), vertically configured and positioned in front of the strings and above the keys, with forward-striking hammers driven by the pushing principle.



Grand action at letoff point



Letoff completed, key disconnected from hammer



Hammer ready to strike a new blow with the key returned halfway to its upper rest position

Schimmel keyboard/action assemblies represent a perfect symbiosis of quality actions and self-manufactured keyboards

The Harmony of Levers

The grand action mechanism

The keyboard/action assembly of a Schimmel grand is the result of an over three-hundred-year evolutionary process. Like all modern-day piano actions, the Schimmel grand action is a jack action, or English action, based on the pushing principle. What happens during the fraction of a second from the time the key is depressed until the hammer strikes the string needs to be described in more detail.

As the key is depressed, it pivots on the balance point (1), causing the back half to be raised, which in turn causes the capstan screw (2) to push upward against the whippen (3), raising it as well. The jack (4), which pivots on the whippen (3), transmits its upward motion to the hammer knuckle, or roller (5), lifting the hammer shank (9) and moving the hammer head (6) towards the string(s).

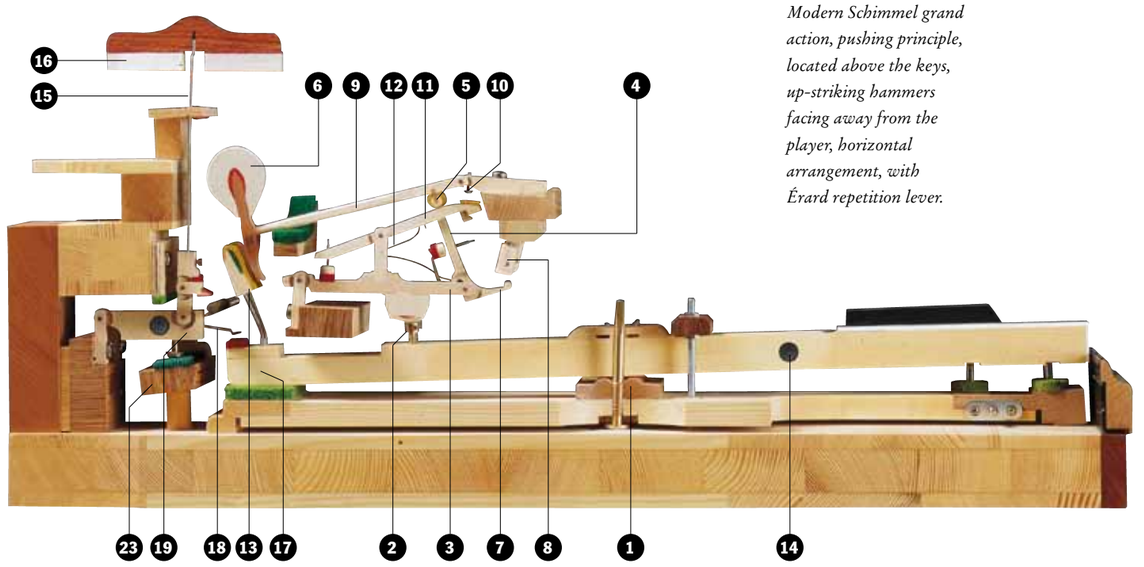
Immediately before the hammer head (6) strikes the string(s), the jack tender (7) is pushed up against the regulating button (8), tripping the jack tongue (4) out from under the hammer knuckle (5), thus interrupting the direct contact between the jack and the knuckle (Figs. A and B above), and hence the direct contact between the key and the hammer shank assembley, this being referred to as the "letoff".

As the hammer head (6) continues moving to the string(s) on its own momentum, the front end of the key continues to be depressed until its downward movement is finally stopped by the front-rail punching. This small amount of movement of the key beyond the point of letoff is referred to as the aftertouch. The drop screw (10, Fig. B above) limits the upward movement of the repetition lever (11), which pivots on the repetition lever flange, which is mounted to the whippen (3). This results in a slight increase in the lifting force exerted by the repetition lever (11) via the knuckle (5) on the hammer shank (9), due to additional tension on the repetition (butterfly) spring (12).

The hammer head (6) rebounds from the string(s) but is arrested on the rebound by the back check (13), the purpose of which is to keep the hammer from "stuttering." The hammer knuckle (5) of the rebounding hammer pushes down the repetition lever (11) before the hammer head (6) is "checked". This increases the tension of the repetition spring (12) and the relifting force exerted by the repetition lever (11) via the hammer knuckle (5) on the hammer shank (9).

Always ready for a new blow

As soon as the key begins its upward return from its fully depressed position, the back check (13) releases the hammer head (6) and the tension of the repetition spring (12) causes the repetition lever (11) to lift the hammer shank (9) enough so the jack (4) can return to its attack position under the hammer knuckle (5). A new blow can now be struck without the key having to return completely to its upper rest position (see Fig. C above).



Modern Schimmel grand action, pushing principle, located above the keys, up-striking hammers facing away from the player, horizontal arrangement, with Érard repetition lever.

Balanced touch weight

Another important detail regarding the key-balancing operation: the dynamic touch weight is set in the factory by inserting a lead weight (14), referred to as a key lead, into the key. This is to help partially offset the weight of the action components that are lifted by the key. It is important for the playability that the touch weight be exactly the same for all keys. Touch weight and key balance determine dynamic playing characteristics by acting in combination with the leverage ratios and the angles of the various lever arms of the keyboard/action assembly.

Indispensible – the trapwork (or pedal) system

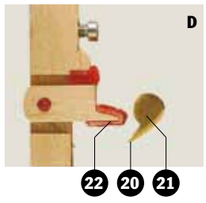
Unlike that of an upright, the damper action of a grand is not integrated into the hammer action, but is a completely separate unit. The grand piano damper head (16), attached to a vertical damper wire (15), is located directly above its respective string/string unison. Depressing the front end of the key raises the back end (17), pushing upward on the damper spoon (18), lifting the damper lever (19), which in turn raises the damper head (16) off the string(s), for uninterrupted vibration. Releasing the key allows the damper head (16) to return to its rest position on the string(s) stopping the vibrations of the string(s). The lead inserted in the damper lever (19) ensures the correct amount of damper-head weight for proper and efficient damping.

The sostenuto mechanism of the Schimmel grand is an integral part of the damper action that enables the pianist to selectively control the damping and sustaining properties of individual notes or keys. Depressing the sostenuto pedal (middle pedal) causes the sostenuto rod (21) to be turned so that its lip (20) is in its up position (Fig. E and F). The sostenuto tabs (22) of all keys being held down at the moment the sostenuto pedal is depressed are caught by the sostenuto rod lip (20), holding the corresponding damper-wire flanges and hence the dampers (16), in their raised position (Fig. F).

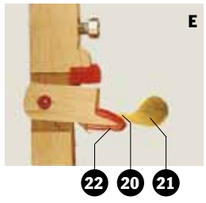
The sostenuto tabs (22) of keys depressed while the sostenuto pedal is engaged do not get caught on the sostenuto-rod lip (Fig. E).

Depressing the sustaining pedal (right pedal) causes the damper-lift rail (23) to raise all the dampers (16) simultaneously, permitting all strings to vibrate freely.

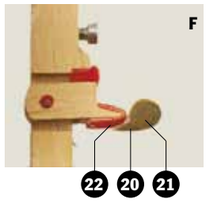
Depressing the una-corda, or shift, pedal (left pedal) causes the entire keyboard/action assembly (with the exception of the damper action) to shift to the right, causing the hammers to strike only two strings of each three-string unison.



Sostenuto pedal not depressed, sostenuto tab (22) and sostenuto-rod lip (20) inactive, damper-lever-wire flange can move freely.

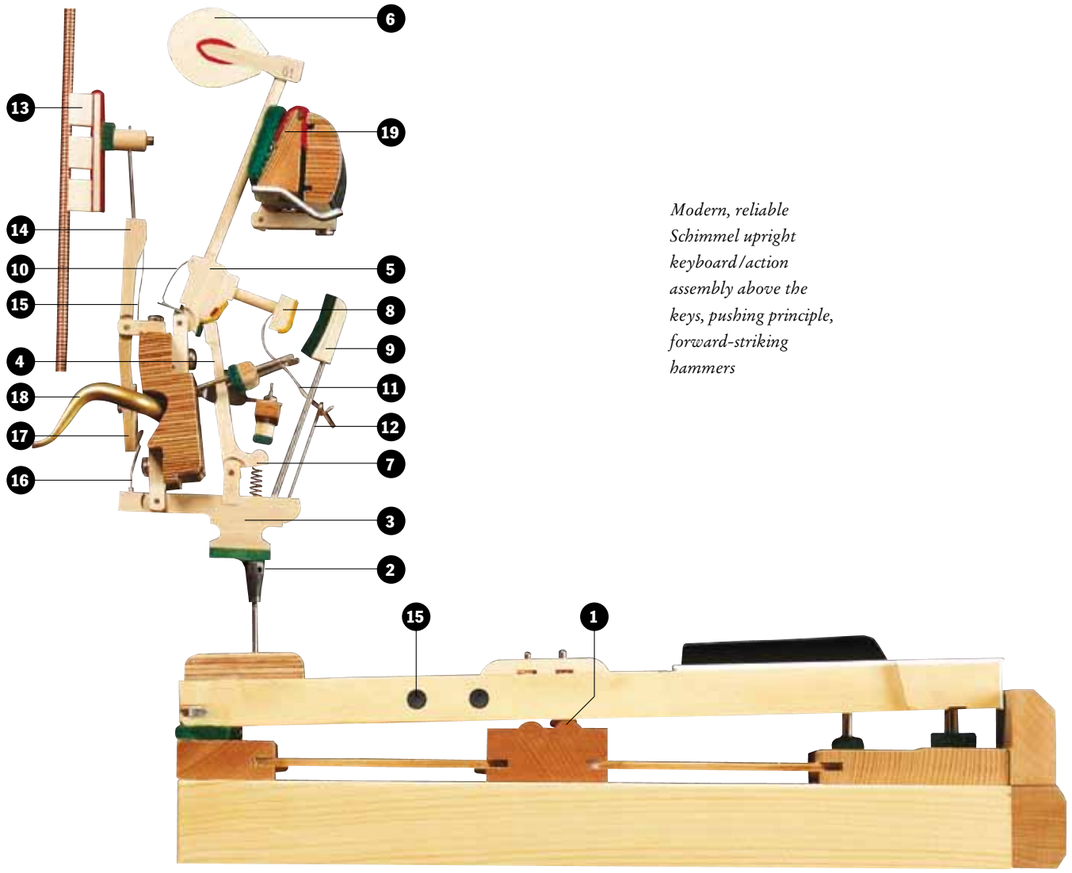


Sostenuto pedal depressed, key depressed afterward, sostenuto-rod lip (20) above sostenuto tab (22), damper returns to rest position on string(s).



Key depressed before depressing sostenuto pedal, sostenuto-rod lip (20) under sostenuto tab (22), damper remains raised.

A Schimmel keyboard combined with an action from a top manufacturer is one of the secrets of the reliability of the Schimmel upright keyboard/-action assembly.



Modern, reliable Schimmel upright keyboard/action assembly above the keys, pushing principle, forward-striking hammers

An Open Secret

The upright action mechanism

In some ways an upright action resembles a grand action; in some ways it does not. Whereas a grand action's parts are in a horizontal arrangement with up-striking hammers, in an upright action they are in a vertical arrangement with forward-striking hammers. In both grands and uprights, the keys rest and pivot on a balance rail (1).

Depressing the front half of the key causes its back half to be raised, which in turn causes the capstan screw (2) to push upward against the whippen (3), raising it. The jack (4), which pivots on a flange mounted to the whippen (3), transmits the upward motion of the whippen (3) to the hammer butt (5), causing the hammer (6) to move forward.

Immediately before the hammer head (6) strikes the string(s), the jack tender (7) is pushed up against the regulating button, tripping the jack tongue (4) out from under the hammer butt (5), interrupting the direct contact between the jack (4) and the hammer butt (5) and hence disconnecting the key from the hammer (6), the moment also referred to as "letoff".

While the hammer (6) is traveling the rest of the distance to the string(s) on its own momentum, the front end of the key continues to be depressed until its downward movement is finally stopped by the front-rail punching ("aftertouch"), causing the jack tongue (4) to completely clear the hammer butt (5).

The hammer head (6) bounces off the string(s); about a third of the way back to its rest position, its backward motion is arrested by the back stop (8) being caught by the back check (9). As the hammer (6) is being catapulted toward the string(s), the tension on the hammer-butt spring (10) is increased. This additional spring tension aids the return of the hammer during extreme pianissimo playing.

Attached to the back stop (8) is the bridle strap (11), which is hooked onto the bridle wire (12). Its purpose is to jerk the hammer head (6) backward after each blow, enabling faster repetition without the necessity of an overly high hammer-butt-spring tension, which would result in a heavier, less responsive touch.

As the key returns to its upper rest position, the jack (4) slips back into its attack position under the hammer butt (5), ready for a new blow. The quicker this takes place, the faster the repetition.

Trapwork

The damper system in uprights is an integral part of the action. The damper (13) of the modern upright action is positioned directly beneath the hammer head (6) and is screwed to the damper wire attached to the damper lever (14). When the damper (13) is in its rest position, the damper spring (15) keeps it tightly pressed up against the string(s). When the key is depressed, the damper spoon (16) attached to the whippen (3), pushes the lower end of the damper lever (17) forward, lifting the damper (13) off the string(s), to allow for uninterrupted vibration.

Depressing the sustaining pedal (right pedal) causes the respective pedal dowel to push upward on the damper-rod tongue (18), which in turn causes the damper rod to push the lower ends of all the damper levers (17) forward, lifting all the dampers at once, regardless of whether keys are depressed.

The soft pedal (left pedal) causes the half-blow rail (19) to be pushed forward, reducing the hammer-blow distance, reducing hammer accelleration and kinetic energy.

The muffler rail (céleste) is standard equipment in most Schimmel uprights. Depressing the practice pedal (middle pedal) causes felt strips to be lowered between the hammers and the strings, reducing the force of the hammer blow and, in turn, the volume of sound. Additionally, Schimmel offers the Schimmel TwinTone Piano, wherein the middle pedal silences the hammer action, so no acoustic sound is generated and that of a digital piano can be heard through headphones or loudspeakers (see page 85).

Anyone who has witnessed the care that goes into the production of the sound-producing assembly of a Schimmel piano has an impression of how good sound is created.

The Origin of Good Sound

Acquired knowledge

A perfectly functioning action is a critical prerequisite for good sound. However, the components of the instrument contributing to the sound also include the wooden backframe assembly, the cast-iron plate, the pin block and tuning pins, the bridges, the soundboard, and the strings.

One might ask how the sound of a piano reaches the ear. The strings are set into vibration by the impulse-like blow of the hammer. These vibrations are then transmitted via the bridge to the soundboard. The vibrational energy of the soundboard causes the surrounding air molecules to produce sound waves. Upon reaching the ear, the sound waves cause the eardrum to vibrate, stimulating the auditory nerve, which converts the vibrations into electrical signals, which are perceived by the brain as piano sound.

Leading piano manufacturing families such as Schimmel have, over a period of several generations, acquired an understanding of music, a knowledge and a sense of artistry and craftmanship required to create the ideal sound of a fine grand or upright piano.

Backframe and plate

The concept of the backframe is very old in the history of musical instrument making. The origin of this type of construction can be traced to the tubular resonators of the stick and raft zithers. The sound-producing mechanism of the dulcimer, psaltery and box zither consisted of a box-type construction which contributed to the necessary stability of such instruments, since backframe components were not yet used. The term “backframe”, in modern piano manufacturing, refers to the wooden framework supporting the soundboard around its perimeter, maintaining its crown and bearing a portion of the pressure exerted by the strings.

Wooden struts for reinforcement

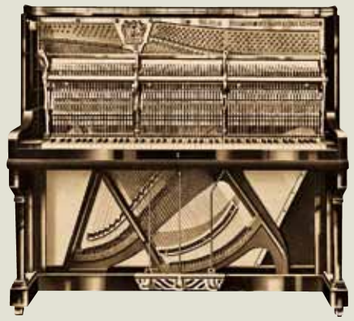
The backframe, with individual wooden struts for bearing the string tension, was first used in harpsichord building. An interesting example of the transition from the harpsichord to the pianoforte is a harpsichord with a wooden backframe built in Paris in 1754 by Johannes Goermans, which he later converted into a pianoforte. A trend toward expanding the keyboard compass and the number of strings of the pianoforte developed in the early 1800’s, requiring backframe designs with heavy wooden backposts. Modern pianos are still built with backposts, although most of the string tension is borne primarily by a stable full cast-iron plate.

Heavy backposts, together with the inner rim and the keybed, form the stable foundation of the sound-producing assembly, and particularly the soundboard. The back is joined with the outer rim.

Metal braces at isolated points between the pin block and the backframe in an Irmler grand, c. 1840

Érard grand, Paris, 1847, with a large number of individual metal bars. Although this was an improvement over metal braces at isolated points, the wooden backframe still supported most of the string tension.

Cast-iron plate and overstringing in a Schimmel grand, Leipzig, 1912



Schimmel upright with covered pin block, 1920

Upright back-and-plate assembly without backposts by Wilhelm Arno Schimmel (1937)

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Individual metal braces

During the course of the nineteenth century, pianists and composers continued demanding greater volume of sound, compelling the manufacturers to increase the string tensions, requiring wires of larger diameters. As the keyboard compass and number of strings increased, the wooden backframe hitherto in use eventually proved inadequate to bear the additional stress. Metal reinforcement was needed.

Shortly after 1800, pianoforte manufacturers John Isaac Hawkins in Philadelphia and Alpheus Babcock in Boston started adding individual metal braces at isolated points. Soon small metal hitch-pin panels were affixed to the wooden backframe. This was followed by various combinations of metal bars and panels.

The cast-iron plate

In the course of time the individual iron braces combined with small hitch-pin panels evolved to the cast iron plate, which kept gradually increasing in size until it eventually spanned the entire soundboard.

An innovation causes a sensation

A pioneer in this development was Heinrich Engelhard Steinweg (1797–1871), who, in the aftermath of the German Revolution of 1848, emigrated to the United States, Americanized his name to Henry Steinway and founded a piano-manufacturing concern in New York. It is in a Steinway & Sons square piano that the first cast-iron plate is found, combined with an overstrung bass. This was most certainly an important innovation. Steinway & Sons patented the combination of a full iron plate and overstringing in 1859 for grands, and in 1866 for uprights. This new type of construction caused a singular sensation at the 1867 World Exposition in Paris. Today the overstrung bass is standard in all modern pianos, both grands and uprights.

The covered pin block

An important improvement in plate design was the change-over from the half plate with an open pin block to the full plate with the pin block completely covered. The pin block of the half-plate design is part of the wooden backframe assembly. Although the plate presses against the pin block, thus supporting it in the direction of the string tension, the entire buckling load at the pin block must be borne by the backposts. Initially, the portion of the pin block in which the tuning pins were driven was open, but piano manufacturers were soon using a plate which covered the entire pin block, with holes in the plate, today in most cases provided with wooden bushings for the tuning pins.

Cast-iron progress

The heavy full iron plate cast in one piece was soon adopted by all piano manufacturers. String scales with higher tensions were now possible, resulting in a completely new sound. The pianists and composers rejoiced. Virtuosity and piano music quickly adapted and proliferated with these new advances in piano manufacturing.

Wilhelm Arno Schimmel's new design for small uprights of the early 1930's included pin blocks that were no longer bonded to the backposts, but were completely separate and integrated into the plate. The backframe assembly, including the soundboard, was fastened to a perimeter plate.

This was followed a few years later by another achievement in small upright design, patented by Wilhelm Arno Schimmel in 1936. Normal-length bass strings could be used in smaller uprights by greatly increasing the overstringing angle. This resulted in models referred to as "console pianos", with modern, stylish cabinetry, yet with a sound of surprising richness and fullness for instruments of their size.

Postless back construction

Naturally, over the past two centuries, a number of different backframe designs were developed in upright piano manufacture. One of the most successful of the instruments with this type of construction was designed by Wilhelm Arno Schimmel. He designed a small upright without backposts in the 1930's which boasted an improved and particularly stable cast-iron plate which bore the entire string tension (about 20 U.S. tons). This instrument gained instant worldwide recognition and many thousand were sold. Today, this type of construction is still in use by Schimmel for the smaller upright models, whereas the larger ones are fitted with backposts.

The Schimmel cast-iron plate

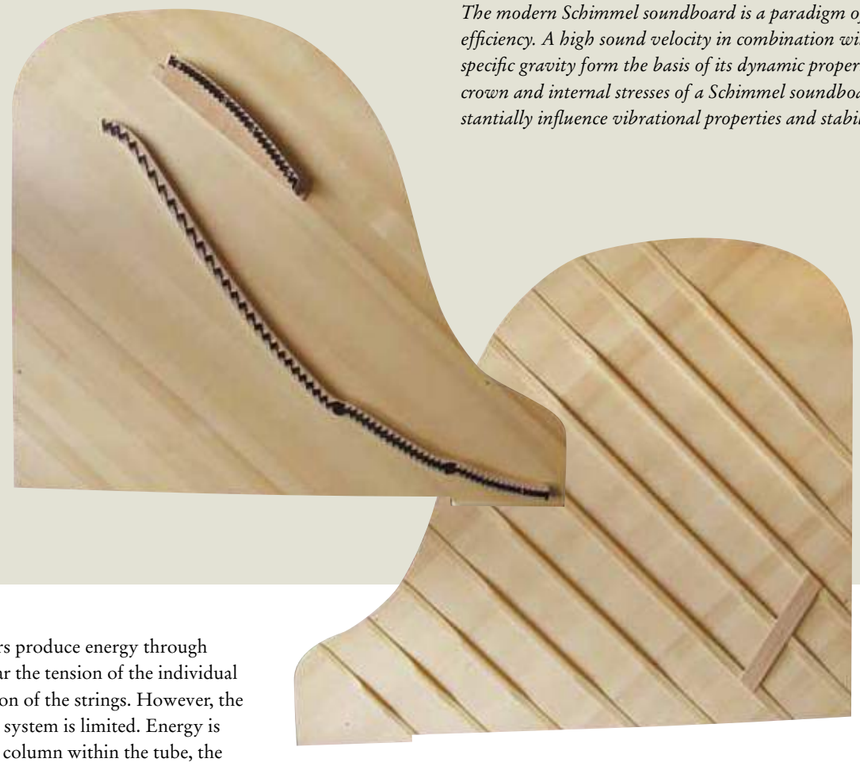
Since the introduction of the cast-iron plate during the second half of the nineteenth century, pianos have undergone a wide variety of improvements in design and construction. Today, Schimmel utilizes modern computer-assisted technology in developing and optimizing its plate designs. These plates have extraordinary stability and a balanced distribution of the material for a bigger, richer, and balanced sound. The cast-iron plate in Schimmel pianos is an integral part of the sound-producing mechanism, in combination with backposts in the grands and larger uprights.

Schimmel bridges are examples of extraordinary precision

Clavichord soundboard (above)

Grand pianoforte soundboard (left)

The modern Schimmel soundboard is a paradigm of high efficiency. A high sound velocity in combination with a low specific gravity form the basis of its dynamic properties. The crown and internal stresses of a Schimmel soundboard substantially influence vibrational properties and stability.



Bridges and Soundboards

Bridges: the energy link

The bridge comprises the connecting link between the string and the soundboard, transferring the vibrational energy. It also serves as a termination for the strings. Bridges are the energy link between strings and soundboard.

Rudimentary individual bridges

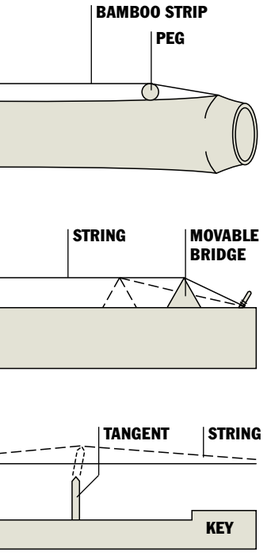
The two small wooden pegs of the stick zither place the bamboo strip under tension and at the same time serve as bridges. The distance between them, together with the tension and mass of the strip, determine the frequency of the sound, which is conducted through the pegs to the piece of bamboo cane serving as a resonator.

Movable bridges

The bridge of the monochord is movable, so that the speaking length of the string can be selected at will. Metal tangents at the back ends of the keys of the fretted clavichord serve as movable bridges, determining the string speaking length. They also set the strings into vibration.

Fixed bridges

The instruments of the harpsichord family (harpsichord, virginal, spinet) have fixed bridges of solid wood; in the earliest versions, these are of light, delicate construction, and usually provided with only one row of bridge pins, which cause the back-string lengths to form an angle with the speaking lengths, referred to as "side bearing." Only the later instruments have bridges with two rows of pins, increasing the amount of vibrational energy transmitted to the soundboard, and hence the volume of sound.



Stick zither with movable pegs (above)

Monochord with movable bridge (middle)

The clavichord's tangents serve as "movable bridges" (below)

Schimmel bridges

Bridges must be stable in order to bear the high string tensions in pianos. For the most pleasing sound, Schimmel decided in the mid-1990's to return to the basics of bridge design, reintroducing solid wood bridges with maple bridge caps, thereby achieving an optimum transfer of the string vibrations to the soundboard. A further advantage of this type of bridge is that it results in a sound in line with today's musical ideal. The bridges in Schimmel pianos are constructed of carefully selected wood. Additionally, the bridges have a special form.

The soundboard

The soundboard is the soul of the piano. It receives the vibrational energy of the strings and converts it to the form of audible airborne sound waves. A good soundboard converts the string vibrations into sound with a very high a degree of efficiency.

Tubular resonators

The stick, tube and raft zithers produce energy through tubular resonators, which bear the tension of the individual strips that perform the function of the strings. However, the vibrational capacity of such a system is limited. Energy is generated primarily by an air column within the tube, the strip vibrating in sympathy – provided of course, that the length of the strip has been correctly selected to match its volume. For this reason, the tubular form does not play an important role in stringed-instrument making, but rather in organ building and in the manufacture of wind and percussion instruments.

Box-type resonators

In the long run, the limited sonority of the tube zithers was unsatisfactory. Replacing the wooden strips with strings of gut or sinew did not result in much improvement. A different type of resonator was needed. With its larger soundradiating surfaces, the box-type resonator exhibited substantially better tonal properties than the tubular one, so much better that it is still being used in bowed and plucked stringed instruments. Stradivari stringed instruments are among the finest of such examples. Box-type resonators were used in pianoforte manufacturing until well into the nineteenth century, a beautiful example of this being the Irmler grand of 1840 with a double soundboard.

Clavichord soundboards

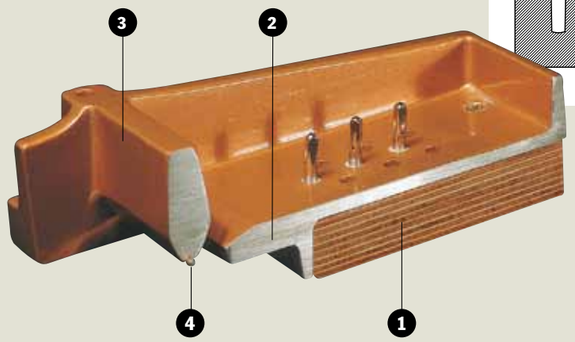
The soundboard designs of clavichords and early square pianofortes featured small vibrating areas with little in the way of internal stresses and ribs and bridges of delicate construction. The often extremely curved bridges sometimes ran across the grain of the soundboard. This light construction resulted in a sound which was rather intimate in character, yet quite in line with the prevailing tastes of the epoch in question. As late as 1852, comparatively small, thin soundboards were still being used in square pianofortes.

Soundboards in harpsichords and pianofortes

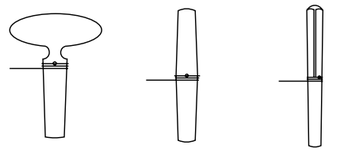
Harpsichords and the first pianofortes, with longer string speaking lengths and higher tensions, necessitated more substantial soundboards and bridges, which in turn resulted in noticeable improvements in the volume of sound and the decay time. Soundboards with larger vibrating areas are found in early upright pianofortes as well.

Schimmel soundboards today

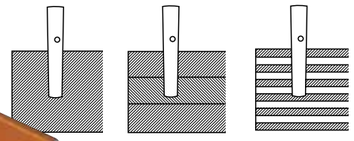
Still, it would be several years before the advent of modern, highly efficient soundboards such as are found in Schimmel pianos today. The first thing needed was an improved stability, necessitated by the continually increasing string tensions. Today, a three-dimensional crown, supported by stable ribs, bridges and soundboard liners, produces high internal stresses which prevent the board from collapsing under the down bearing of the strings.



Pin block (1) in a Schimmel grand, rigidly mounted to the cast-iron plate (2). The solid capo d'astro bar (3) is fitted with a stainless steel inlay (4) for precisely terminating the strings.



Wooden tuning peg (violinmaking)
Hand-forged metal tuning pin
Modern tuning pin
(from left to right)



Pin block
– solid-wood construction
– sandwich construction
– laminated construction
(from left to right)

Tuning Pins and Pin Blocks

Individual tensing elements

The stick zither, predecessor of all stringed instruments, produced varying frequencies according to the vibrational properties of the bamboo strip, depending on its length, weight and tension. A technique had to be developed to place a wooden strip or string under tension. The stick zither's two wooden pegs functioned not only as bridges, but also as tensing elements.

Tuning pegs and pins

The next step in the evolution of tensing elements was the integration of turnable elements in screw form. The first known tuning pegs were made of wood, a material still in use today by makers of bowed stringed instruments. Since wooden tuning pegs are unsuitable for pianos, metal tuning pins were used from the very beginning, the first ones being hand forged. The portion of the pin embedded in the pin block was roughed up with a file for better holding power.

Modern tuning pins

Modern tuning pins are made of a high-strength steel, with absolute precision, improvements resulting from progress in the field of metallurgy and modern manufacturing methods. The top portion is square in cross section and slightly tapered, assuring a good seating of the tuning-hammer tip, very important because of the high tuning-pin torque customary in piano manufacture today.

Solid-wood pin blocks

The first pin blocks were of solid wood, which remained standard practice for centuries. Wood continues to be the ideal material down to this day.

Pin blocks in "sandwich" construction

The first piano manufacturer to employ a pin block in a "sandwich" construction, already in 1820, at first with two, later with four, layers of wood was Joseph Brodmann in Vienna (Austria), resulting not only in improved tuning pin torque but at the same time reducing the susceptibility of the block to cracking and warping. Only certain types of specially processed woods are able to provide tuning pins with a firm seating, yet permit smooth rotation, over a period of many years.

Schimmel introduces the laminated pin block

Wilhelm Arno Schimmel patented a new type of pin block. In 1956 he had recognized that veneer manufacturing had progressed to the point where it was now practical to replace the two to four layers of the sandwich-type pin block with multiple laminations of beech with the grain running crosswise in alternate laminations. This advancement in piano manufacturing set a new standard for the industry worldwide.

Development of Soundboards

BACK STRUCTURES
- TUBULAR SOUNDBOXES
- SOUNDBOXES IN BOX FORM
- SOUNDBOARDS WITH LINERS
- POSTLESS BACKFRAMES
- INDIVIDUAL BACKPOSTS
- MULTIPLE BACKPOSTS
- MODERN BACK CONSTRUCTIONS
- SCHIMMEL BACK SYSTEMS[1]

SOUNDBOARDS
- TUBULAR SOUNDBOXES
- RESONATORS IN BOX FORM
- INDIVIDUAL SOUNDBOARDS
- DELICATE BOARDS AND RIBS, LITTLE TENSION
- STRONGER BOARDS AND RIBS, INCREASED
- STRONG BOARDS AND RIBS, GREAT TENSION
- MODERN SOUNDBOARD CONSTRUCTIONS
- SCHIMMEL SOUNDBOARD SYSTEMS[2]

CAST-IRON PLATES
- INDIVIDUAL METAL BRACES
- MULTIPLE METAL BRACES
- INDIVIDUAL METAL CONSTRUCTIONS
- SEPARATE BARS
- BARS AND PANELS
- CAST-IRON PLATES
- MODERN PLATE DESIGNS
- SCHIMMEL PLATE SYSTEMS[3, 7]

BRIDGES
- MOVABLE BRIDGES
- FIXED BRIDGES
- SOLID-WOOD BRIDGES WITH 2 ROWS OF PINS
- VERTICAL LAMINATIONS – SOLID WOOD
- VERTICAL AND HORIZONTAL LAMINATIONS
- HORIZONTAL LAMINATIONS
- SOLID WOOD – HORIZONTAL LAMINATIONS
- SCHIMMEL BRIDGE SYSTEMS[4, 7]

TUNING PINS
- INDIVIDUAL TENSING ELEMENTS
- WOODEN TUNING PEGS
- FORGED TUNING PINS
- TUNING PINS OF HIGH-STRENGTH STEEL

STRINGS
- NATURAL FIBERS
- BRASS, IRON
- STEEL, COPPER
- SPECIAL PIANO WIRE

PIN BLOCKS
- SOLID-WOOD CONSTRUCTION
- SOLID WOOD, SANDWICH CONSTRUCTION
- LAMINATED CONSTRUCTION
- SCHIMMEL PIN-BLOCK SYSTEMS[5]

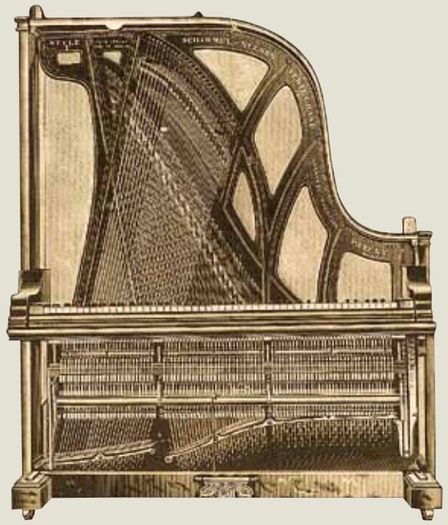
STRING SCALE DESIGNS
- STRAIGHT STRUNG
- OVERSTRUNG, LOW TENSION
- OVERSTRUNG, HIGH TENSION
- SCHIMMEL SCALE SYSTEMS[6, 7, 8]

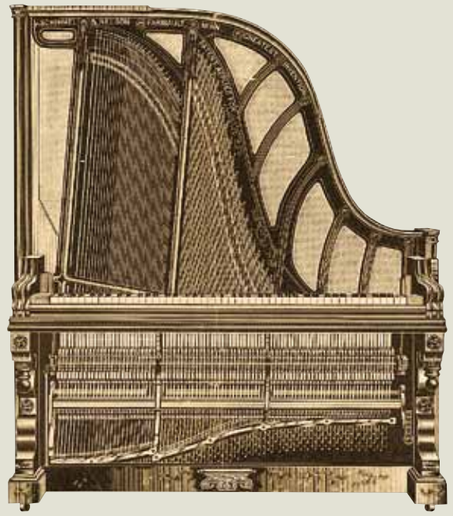
SCHIMMEL GRAND AND UPRIGHT SOUND-PRODUCING MECHANISMS

1 Solid spruce posts, hardwood soundboard liners
2 Soundboards of mountain-grown spruce, 3-dimensional crown and stress
3 Grey cast iron with high inner damping and low proper frequencies
4 Hard beech with laminated maple cap
5 Laminated construction with tough beech veneers
6 Balanced parameters and inharmonicity
7 CAPE optimized (CAPE = Computer-Assisted Piano Engineering)
8 Triplex scales: all grands, upright series K132 and K125

- HISTORICAL DEVELOPMENT
- SCHIMMEL GRANDS
- SCHIMMEL UPRIGHTS

Upright grand by Schimmel & Nelson, Faribault, Minnesota, U.S.A., 1894, special features including a hanging action and the tuning pins located just above the bottom board. Benedict Schimmel, a brother of Wilhelm Schimmel, manufactured these instruments in both an overstrung (left) and a straight-strung version (right).





Strings and String Scales

Vibrating strings generate the sound

There are many different kinds of stringed instruments, but the piano produces a unique sound. A sound spectrum must initially be generated, dependent on the impulse and locus of the hammer head striking the string, as well as on the physical properties of the string and sound-producing assembly. This unique special sound spectrum is compelled to vibrate in a typical pattern, which is filtered by the sound-board in such a manner that certain components of it are retained, while others are more or less supressed. The result of this filtering is the unmistakable pattern of piano sound.

Metal strings

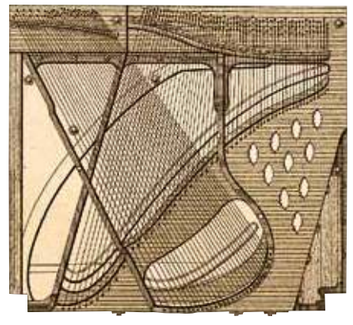
Metal strings have been in use for over five hundred years. The earliest mention of them in clavichord building is found in *Musica getutscht* by Sebastian Virdung (*c. 1465), published in 1511. In view of the continual demand on the part of pianists since the middle of the eighteenth century for increased volume and dynamic range, piano manufacturers have been compelled to increase string tensions and masses, necessitating the development of special high-tensile-strength music wire. The manufacturing of modern piano wire is a complicated process involving state-of-the-art technology. Schimmel pianos are built using only the highest quality of steel wire, able to produce a clear, full sound and a precise tunability.

String scales

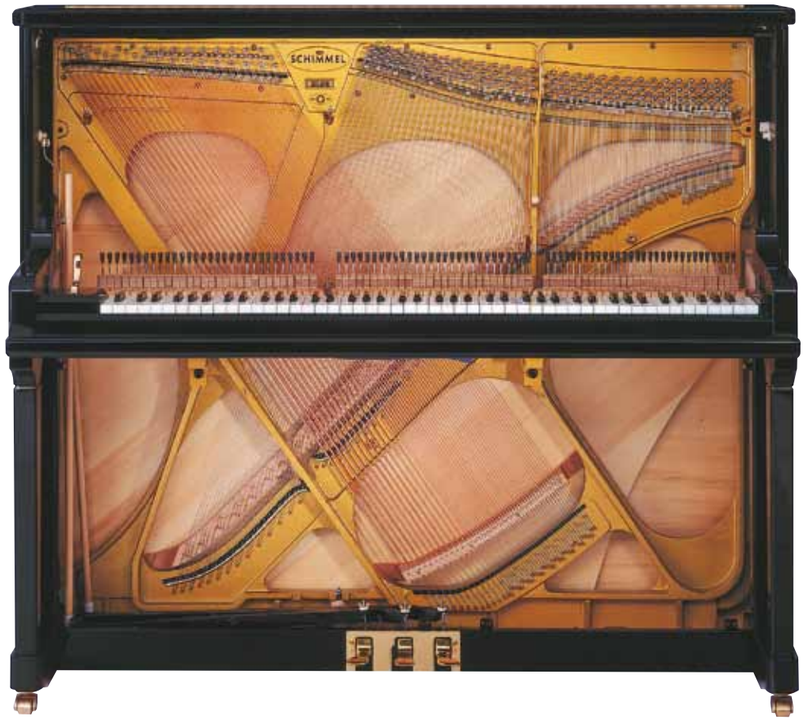
"Scale", in the piano manufacturing sense, refers to the layout and dimensions of the strings. "Scale designing" refers to the selection of the speaking length, mass per unit length, and tension of each string to cause it to vibrate at the desired frequency.

String scales are calculated using a formula referred to as the "Taylor formula", devised by the English mathematician Brook Taylor (1685–1731). Schimmel has gone on to include other important factors, such as inharmonicity (progressive sharpening of the partial tones), elastic elongation, inhomogeneity of copper-wound bass string mass, rotational, torsional, and longitudinal vibrations, and decay behavior. Schimmel uses its own computer software, creating the prerequisites for excellent tone quality, tunability and tuning stability.

Straight-strung upright piano by Broadwood, London, c. 1850. Unlike those of grands, the straight-strung uprights' strings extended downward almost to the bottom board. In comparison to the upright grands, this results in shorter strings (particularly in the bass) and at the same time permits a considerably more compact outer form.



Example of an overstrung bass, c. 1870



String layout in a modern 52" Schimmel Orchestra upright, K132 series (2000)

Scales in instruments of vertical construction

The first upright pianofortes had straight-strung scales, and were later superseded by overstrung scales. Bass strings were angled to obtain longer speaking lengths in the small "cabinet pianos". Starting in 1828, Pape in Paris had the bass strings of his "console pianos" configured diagonally across the other strings and he eventually patented this type of design. By 1900, the overstrung bass had become the standard in piano manufacturing.

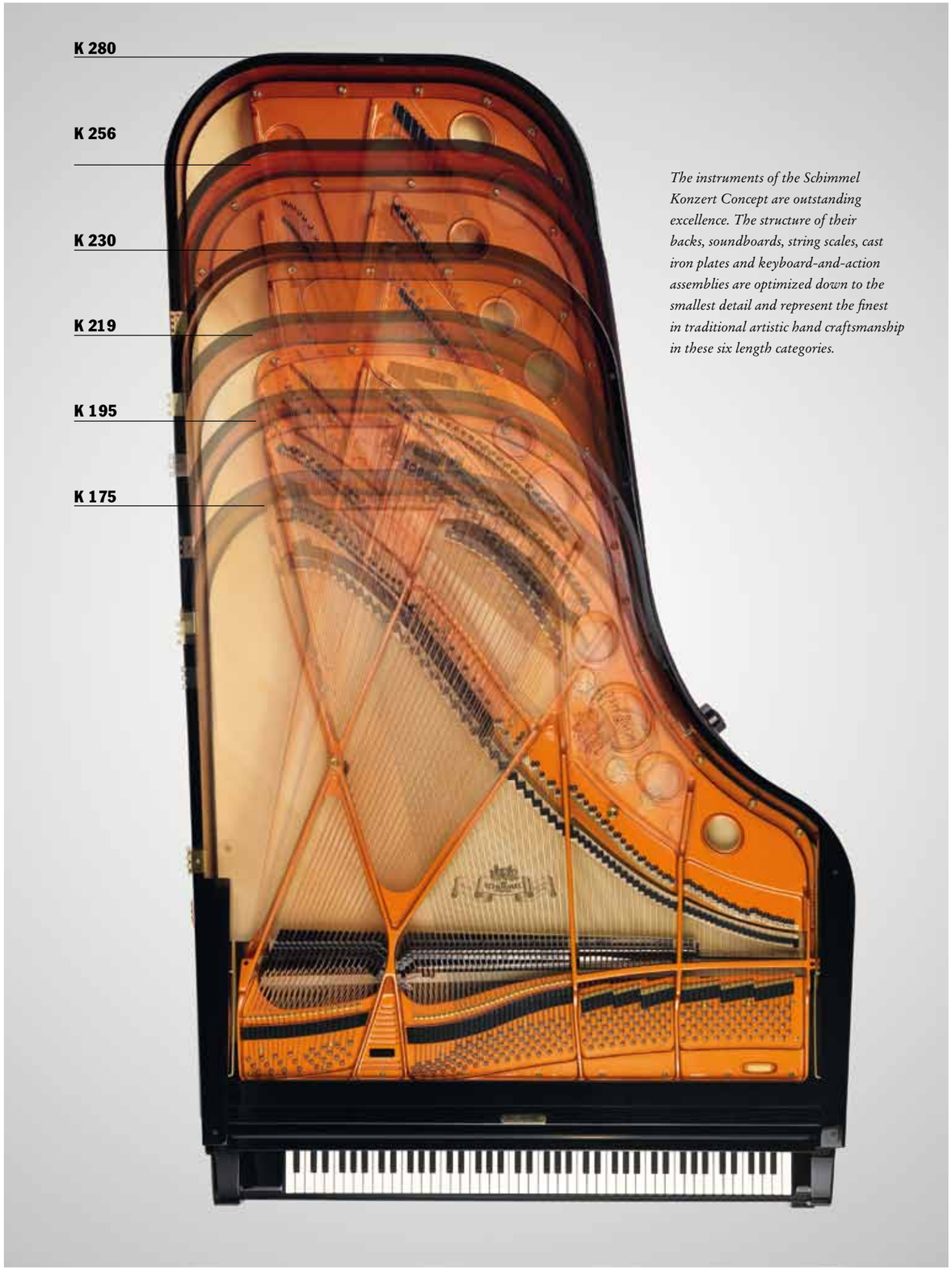
Toward the beginning of the 1930's, a decisive step forward was achieved by Wilhelm Arno Schimmel (1898 – 1961). This patent for a full iron plate design for uprights without backposts created the tradition of the *Cabinet Pianos*, thus providing his company with a new impetus. Today an overstrung bass with the tuning-pin panels located at the top of the plate is the norm.

Scales in instruments of horizontal construction

Through the centuries, piano manufacturers have used the most diverse types of string layouts, both straight or radial strung, and overstrung. As a rule, clavichord strings run crosswise to the keyboard, with the tuning pins usually located to the right, while harpsichord strings run approximately parallel to the keys. The square pianoforte, like the clavichord, has a crosswise string layout. The tuning pins are located at the front, in the vicinity of the keyboard, at the back, or at either of the two sides. Modern grand pianos utilize an overstrung bass, with the plain-wire strings running approximately parallel to the keys, and the tuning pins at the front of the instrument.

Schimmel scales

Schimmel pianos are classic examples of the overstrung bass used in pianoforte manufacturing since the beginning of the nineteenth century. All-important parameters for generating an excellent piano sound are skillfully optimized by Schimmel's own CAPE software (CAPE = Computer-Assisted Piano Engineering).



The instruments of the Schimmel Konzert Concept are outstanding excellence. The structure of their backs, soundboards, string scales, cast iron plates and keyboard-and-action assemblies are optimized down to the smallest detail and represent the finest in traditional artistic hand craftsmanship in these six length categories.

Four Generations of Piano Manufacturing

Königlich Sächsisches
Ministerium des Innern.

Dresden, am 17. Juni ..... 1909.

679 D.R.

100 MARK 22. Juni 09.
20 MARK 22. Juni 09.
20 MARK 22. Juni 09.
10 MARK 22. Juni 09.
150 M – ₰ Stempel Porto 26 ₰

Seine Majestät der König

haben auf Vortrag des Ministeriums des Innern Allergnädigst zu genehmigen geruht, daß Ihr den Titel von Seiner Majestät dem König von Rumänien verliehenen Titel

„Königlich Rumänischer Hoflieferant"

annehmen und führen.

Die erteilen hierzu auf Ihre an die Amtshauptmannschaft Leipzig gerichtete Eingabe vom 9. d. M. mit der Aufforderung benachrichtigt, die hierzu erforderlichen Kosten Urkunde zu bezahlen, die auf diese Bekanntmachung hin sofort erfolgen.

Ministerium des Innern.
Für den Minister
Marx

An
Herrn Pianofortefabrikant
Wilhelm Schimmel
Inhaber der Firma Wilhelm Schimmel & Co.
in
Wittenberg
bei Leipzig

Appointment document as purveyor to the royal house of Romania, issued by the Royal Saxon Ministry of the Interior

The titles of purveyors to His Grace the Grand Duke of Saxe-Weimar (1899) and to His Majesty the King of Romania (1909) are honorable acknowledgements for Wilhelm Schimmel.

Art and craftsmanship

The manufacturing of fine pianos requires both artistry and craftsmanship – an integral part of the Schimmel family tradition. This tradition of skill and personal commitment is cultivated by the entire Schimmel staff, resulting in instruments of worldwide recognition.

Wilhelm Schimmel

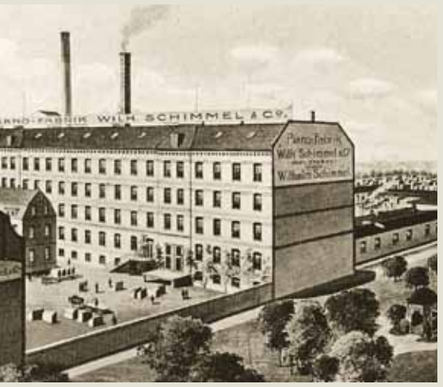
Central Germany was the homeland of Silbermann and Friederici and the cradle of German pianoforte manufacturing. Wilhelm Schimmel (1854–1946), son of a precentor, also learned the art of piano making in Leipzig, at that time the home of many piano manufacturers in Central Germany. At the age of 16 he began an apprenticeship as a cabinetmaker. A year later he was making accordions and violins. Musical-instrument making became his first love. At the age of 22, he gave up a secure position as a supervisor in a large cabinetmaking concern in Saxony to start over again as an apprentice piano builder at the eminent Stichel piano factory in Leipzig. Eight years later, his yearning for independence and his confidence in his own abilities motivated him to found his own company.

1885 – the first generation

The history of the Hof-Pianofortefabrik Wilhelm Schimmel began on May 2, 1885, the day on which, in a modest workshop in a town not far from Leipzig, the first Schimmel piano saw the light of day. The young company enjoyed a period of rapid growth, since in those days home music making centered around the piano. As a result of his company policy for rigid quality assurance, the demand for his instruments grew rapidly, to the extent that before the year ended he was compelled to move to larger premises. Within two years, the company had outgrown these as well. On March 1, 1894, after not quite nine years, Schimmel piano opus No. 1000 was produced.

Wilhelm Schimmel (1854–1946)

Manufacturing facilities in Leipzig (1897)



Wilhelm Schimmel, the founder of the company, in his office (1925)

An inside view of the factory in Leipzig (1897)

Examples of the Schimmel line on the fortieth anniversary of the founding of the company (1925)

The Golden Age

Early success enabled Schimmel, in 1895, to erect his first company-owned factory in Leipzig-Reudnitz, his employees now numbering about 30. The founder of the company now belonged to the inner circle of recognized piano manufacturers in Leipzig, the piano-manufacturing center of Germany and the city of Bach, Mendelssohn-Bartholdy, Schumann and Wagner. Schimmel was in touch with the times, offering his customers a variety of reasonably priced models fully in conformance with the tastes in music and furniture of the Gay Nineties. The sound-producing assemblies of his instruments were among the most advanced of that epoch, and the instruments were known for their highly developed repetition actions, a pleasing touch, and a particularly excellent sound. The company continued to grow and in 1897 the factory again had to be relocated, this time to a new factory building in Leipzig-Stötteritz. Schimmel pianos were in the meantime being exported to a number of countries, including Russia, Italy and Americ. Schimmel piano opus No. 2500 was completed in 1898.

Majesties and medallions

As the company celebrated its silver jubilee in 1910, Schimmel pianos were long since internationally known. Wilhelm Schimmel's professional knowledge and his irreproachable character won him appointments as purveyor to His Grace the Grand Duke of Saxe-Weimar (1899) and His Majesty the King of Romania (1909). Among the awards that followed were Gold Medallions at the World Expositions held in Leipzig in 1913 and 1914, with one of the independent exposition newspapers commenting on Schimmel pianos as follows:

"It was this upright, the tone of which had first captivated our attention, and after testing the performance of the instrument, we must confess that, in its sonority as well as delicacy and beauty of tone, it is in no way inferior to the best uprights of the select few top-selling international 'name brands' Bösendorfer, Blüthner, Steinway *etc.*"

Forty years of tradition

In 1925, as his company celebrated the fortieth anniversary of its founding, Wilhelm Schimmel was enjoying a high degree of recognition. His pianos were finding acclaim and acceptance everywhere and each instrument was a labor of love, personally designed. He not only cultivated long-standing piano-manufacturing traditions but was open for new technologies. As this epoch saw the heyday of the self-playing musical instruments, Schimmel also produced player pianos. These worked on a pneumatic principle, with the commands for striking the keys coming from holes punched in a paper music roll, which, as with the binary code used in modern-day computers, delivered only yes/no information. Hence, the player piano was among the fore-runners of the first IBM Hollerith machines.

Wilhelm Schimmel and his employees in front of his first company-owned factory building in Leipzig-Reudnitz (1896)

Schimmel player piano from the year 1920. The player mechanism was controlled by holes punched in a paper music roll – as found in the later IBM Hollerith machines.

Schimmel grand with overstrung bass (1923)

Wilhelm Arno Schimmel (1898–1961)

Golden Jubilee model by Wilhelm Arno Schimmel (1935)

3'10" mini grand, with a mirror-image string layout, enabling long bass strings, by Wilhelm Arno Schimmel (1938)

The world's first grand with cabinetry of transparent acrylic plastic in a small 3'10" size by Wilhelm Arno Schimmel (1951)

Over a period of four decades, this timeless vertical design has remained Schimmel's best-selling upright series (1955–1995)

1927 – the second generation

In 1927, at the age of 73, Wilhelm Schimmel retired from active management of the company, passing the mantle to his son, Wilhelm Arno Schimmel. This took place as the world economy was going through a difficult phase, culminating two years later in the Great Stock Market Crash on "Black Friday", Oct. 25, 1929, initiating the Great Depression. In its best years, the annual production of the German piano industry prior to the Great War (later referred to as World War I) had been about 180,000 units. The runaway inflation of 1923, followed by the Great Depression, resulted in a drastically curtailed production. To add to its problems, the piano industry now had to compete with the radio and the gramophone.

As the 1920's drew to a close, Schimmel and a number of other piano manufacturers reacted to this structural crisis by pooling their resources in a coöperative venture known as the Deutsche Piano-Werke AG, with production facilities in Luckenwalde (near Berlin) and in Brunswick (Braunschweig). Soon Wilhelm Arno Schimmel realized that his strength and his initiatives would not be enough to coördinate the differing interests of the various companies of the group. He seceded in 1931, and successfully continued the family tradition of manufacturing pianos in Brunswick under the name Wilhelm Schimmel, Pianofortefabrik GmbH. This proved to be a stroke of luck, since 20 years later in divided Germany Brunswick belonged to the Federal Republic of Germany, while Leipzig became part of the German Democratic Republic ("East Germany").

1935 – golden jubilee

During the difficult years preceding World War II, and during the war itself, Schimmel was able to rely on the good reputation of its instruments. In the mid-1930's, Wilhelm Arno Schimmel had developed a small upright without backposts and a new keyboard/action design. Its petite styling ideally reflected contemporary tastes, the large uprights of yesteryear having in the meantime become old fashioned and out of style. Additionally, new models were introduced during the 1930's: the Golden Jubilee upright and the 102 "Fortissimo" series, which for decades to come would be the hallmark of the unmistakable tonal character of Schimmel uprights.

In October of 1944, the factory was completely destroyed in a fire, interrupting the manufacturing. Rebuilding the facilities began as soon as circumstances would permit. Following the war years, the company kept its head above water with all kinds woodworking, manufacturing small tables, furniture for schools, plywood components for trucks and even complete wooden interior work on buildings. And to the surprise of many, already in 1949 Schimmel was exhibiting pianos from its resumed production at the first Export Fair in Hanover, the forerunner of what is now the world's largest industrial fair.

The 1950's – confidence in the future

The desire to play music never abates… in good times or bad. Music is a part of human life. This was the basis of the optimism and confidence in the future with which Wilhelm Arno Schimmel led the company into the fifties. In 1950, he gave German piano manufacturing a new impetus with the "Schimmel Line". A year later, he caused a sensation by introducing the world's first grand with cabinetry of transparent acrylic plastic, a model which was perfected thirty years later by his son Nikolaus Wilhelm Schimmel. To this day, the acrylic grand stands as one of the company's image builders, an outstanding achievement in German piano manufacturing, and immensely popular as a concert-tour instrument.

The world's best-selling German-made piano

Piano sales were booming in the 1950's and by the end of 1958 Schimmel had become the world's best-selling upright produced by a resident German piano manufacturer. Schimmel pianos were being exported the world over. Nikolaus Wilhelm Schimmel joined the management of the company in 1959, assisting his father in piano design and marketing activities.

Wilhelm Arno Schimmel provided the piano industry with new impetus with his modern cabinetry designs of the late 1950's

*Nikolaus W. Schimmel (*1934), who in the mid-1980's reintroduced the Schimmel acrylic grand in an improved version. Under his leadership, the Schimmel team of experts realised numerous other outstanding achievements which have garnered worldwide recognition for the company.*

1961 – the third generation
Tragedy struck the company in 1961 when Wilhelm Arno Schimmel suddenly and unexpectedly passed away. His son, Nikolaus Wilhelm Schimmel, thanks to years of systematic training in the art of piano manufacture, both in the company and abroad, was well prepared for assuming the task of managing the company. The *Wirtschaftswunder* ("Economic Miracle") of the Federal Republic of Germany was in full bloom at the time but in the German piano industry this miracle could only be accomplished with plenty of hard work. Nikolaus W. Schimmel, with well defined goals and clear visions, continued in the 1960's to build on his father's achievements.

The company in transition
History repeated itself when Nikolaus W. Schimmel soon realized that, to keep up with the continually increasing demand for traditional pianos during the 1960's, further expansion was becoming unavoidable. The company had once again outgrown its manufacturing facilities. The existing premises, in the heart of burgeoning Brunswick, could not be expanded. It was decided that a completely new and modern plant in the industrial-zoned area on the south side of the city would be erected. A 64,000 sq. ft. lot was purchased in 1966 and a year later the first stage of construction was completed. The second stage of construction was completed in 1975, providing the additional production capacity so desperately needed.

New dimensions
Annual production had increased to 7,500 units by 1975, and to 10,000 units by the early 1980's. At that time approximately one thousand units annually were marketed under the French brand names Érard, Gaveau, and Pleyel, manufactured under a license contract with the Société Gaveau-Érard in Paris. The contract existed from 1970–1993. Meanwhile, new models were being designed utilizing Schimmel's own CAPE (Computer-Assisted Piano Engineering) software. Nikolaus W. Schimmel, in the mid-eighties, introduced his own improved version of his father's transparent acrylic grand. Though other manufacturers have built clones, the famous Schimmel acrylic grand continues to this day to be the most refined in terms of beauty and elegance.

A century of tradition and progress
1985 marked the Schimmel centennial and the company could proudly look back on a one-hundred year history of piano manufacturing. From a small beginning in a rented workshop in 1885, Schimmel had grown to become Germany's leading piano manufacturer, making Brunswick the piano-manufacturing center of Germany.
Toward the end of the 1980's, the international piano market was hit by a recession, with shrinking sales, requiring downsizing of production. Nikolaus W. Schimmel met this new challenge, as his father did sixty years earlier during the worldwide Great Depression, with creativity and commitment. He promptly reacted to the changing market situation and Schimmel was able to retain its leading position in the Federal Republic of Germany (at that time still consisting only of "West Germany"), with two-thirds of its annual production being exported to other EU (European Union) countries, North America and the Pacific area.

Emerging into a new millenium
Throughout the last decade of the twentieth century, Nikolaus W. Schimmel and his team of piano makers par excellence were hard at work laying the fouundations for a new range of the Schimmel Konzert line of grands and uprights. Moreover in close cooperation with the reknowed designer, Prof. Luigi Colani, the futuristic grands and pianos of the Pegasus range were developed. The Schimmel Art Edition grand, a product of collaboration and friendship between the piano maker Nikolaus W. Schimmel and contemporary artist Otmar Alt, is equally extraordinary.

Nothing feels more comfortable in our hand than a stone worn smooth by the ocean tides to an ovoid shape. Nothing is more aesthetic than the sweeping form of a sand dune shaped by the wind. This natural beauty and elegance is reflected in the Schimmel Pegasus grand.

Extraordinary: The 7' Schimmel K 213 Art grand, Otmar Alt Edition (1998).
In collaboration with world-renowned artist and sculptor Otmar Alt, Nikolaus W. Schimmel introduced a colorful and fanciful instrument with the ability to charm the senses.

Hannes Schimmel-Vogel

The fourth generation
In summer 2003, Nikolaus W. Schimmel handed over the management of the company to his son-in-law, Hannes M. Schimmel-Vogel, who will now carry on the family business in its fourth generation . Against the backdrop of the outstanding instrument quality of the newly developed concert range of Schimmel grands, as well as pianos, Hannes Schimmel-Vogel is setting new targets and creating the perfect conditions for this traditional family business to stand its own ground in the face of international competition in the twenty-first century.

Worldwide dealer family
Another important asset to Schimmel is its worldwide dealer family, which, between Tokyo and Paris, New York and Berlin, London and Dubai, sells more Schimmel pianos than of any other name brand of German manufacture. One of the foundations of Schimmel's outstanding international reputation is the network of authorized dealers, amply qualified to provide reliable customer advice and service. A third integral part of Schimmel's company policy is a self-imposed obligation to provide top quality. These three criteria share equally in company priorities.

Germany's leading piano manufacturer
Today the company remains Germany's leading resident family-owned and -operated piano manufacturer. Exemplary design, outstanding workmanship and excellent sound have made Schimmel one of the top name brands worldwide. The artistry and craftsmanship which are prerequisites for piano manufacture are part of a century-old family tradition. Nothing is left to chance. Every detail of each individual instrument is a labor of love. The research and development and production facilities are supported by modern computer programs, including exclusive company-designed software. Although Schimmel coperates with scientists and scientific research institutes, one of the company's greatest assets continues to be its employees. Overall quality of Schimmel pianos depends on motivation, artistry, craftsmanship, and employee satisfaction.

Confidence in the future
As we all know, the future is hidden to our view. This holds true for human life, and it holds true for a company as well. But we have confidence in the future because this at the same time means to have confidence in the present. When Wilhelm Schimmel built his first piano in 1885 in a modest workshop in a suburb of Leipzig, we can assume that he entertained thoughts concerning the future of the small business which he had just founded. At the time it was still more important for him to have confidence in the present and to build instruments that would hold their own against those of his many – and able – competitors and find favour with the piano-buying public. It was this confidence in the present which soon resulted in the future success of his young company.

What held true then – namely, to plan for the future, and for the present to manufacture pianos day after day which are held in high regard internationally – has remained Schimmel's unwritten philosophy down to this day. And confidence in the future based on confidence in the present is the philosophy of the fourth Schimmel generation as well.

A family brand par excellence with forward-thinking initiatives
Half a year after taking over as CEO, in spring 2004, Hannes M. Schimmel-Vogel began blazing a trail for the future of the company. The increased orientation of the company's activities to meet the expectations and requirements of the customer is at the very forefront. He sets his team ambitious targets in order to pave the way for the creation of a family brand, which in terms of grands and uprights, will, in the future, span a wider price range. Aside from new, first-class designs for the Schimmel Classic ranges, a wealth of exquisite instruments with high quality intarsia work have emerged. Furthermore, since the beginning of 2004, the range of models has been expanded to include the instruments of the "Wilhelm" brand. With instruments such as these, Schimmel is carrying on the philosophy of the company founder, Wilhelm Schimmel, by building „quality instruments at a moderate price" (quotation from a catalogue dating from the turn of the 19th century).

Among the best
In France, piano tests conducted by the leading music-trade magazines have a long tradition. Each year, professional pianist test-play grand and upright pianos in various categories for the magazines *Diapaon, Le Monde de la Musique* and *Pianiste*. Since 1996, Schimmel has been participating in these tests. And each year a Schimmel grand or upright has received the top award for its tonal and playing characteristic – high recognition for the intensive research and development that goes into Schimmel Pianos.

The keyframe must rest uniformly on the keybed, with no spaces in between. This requires skill and a sure eye.

How Quality is Created

CAPE (Computer-Assisted Piano Engineering) is the design software developed by Schimmel

People work here

Wherever appropriate and efficient, modern machines replace manual labor for the heavy work. This in no way is to say that Schimmel pianos are assembly-line products. A product can only be as good as the workplaces of the employees. Schimmel produces quality pianos because Schimmel employees feel comfortable in the work environment. Daylight illumination through sawtooth skylight roofing provides a pleasant atmosphere in all areas of the manufacturing facility except the department where the soundboards are produced, the climatized atmosphere of which requires a flat roof provided with large domelights.

Light and fresh air go together

The factory room climate is adapted to the workforce. The relative humidity in the manufacturing areas is maintained at a minimum of 45%. This coincides with the optimum humidity for the wooden parts of a piano. All manufacturing areas are provided with a constant flow of fresh air from outside, some of which is filtered several times, reused and finally transported back outside in an environmentally friendly manner by exhaust systems for dust and lacquer fumes. Schimmel wastes no energy in circulating, heating and humidifying the air in the manufacturing areas.

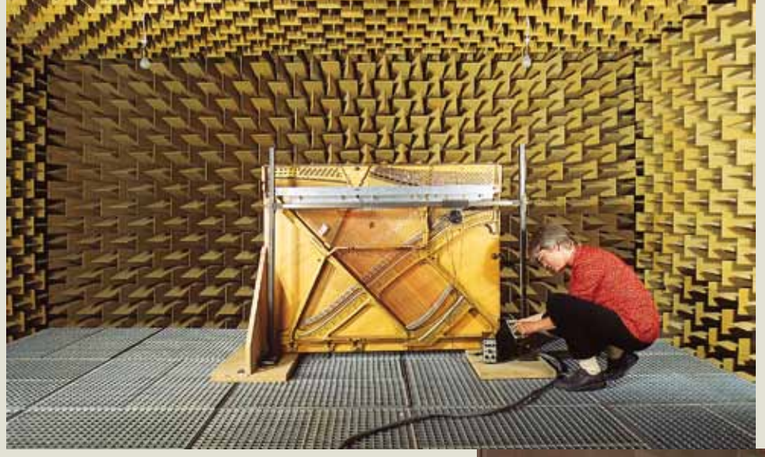
Experience and research

Schimmel manufacturing experience and scientific research complement each other, with the goal of producing beautiful instruments with a long service life. Production methods are continually beeing improved. Schimmel leads the industry by staying on the cutting edge of technology through extensive internal research and development and coperation with renowned scientists and institutes such as the Wilhelm Klauditz Institute of Wood Research, a member of the world renown Fraunhofer Society in Germany.

The science of vibrations

A prerequisite for creating a piano of exceptional tone quality is a detailed knowledge of the vibrational properties of wood and strings. Schimmel's years of research and refined calculation methods for scale design ensure optimal results. Employee creativity, experience, internal technical developments and external research are four areas in piano manufacture that have helped Schimmel excel in the industry.

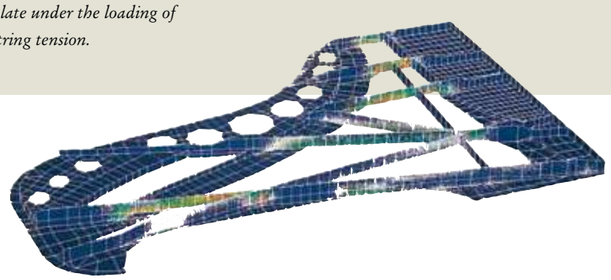
Precise measurements of static and dynamic properties of Schimmel keyboard/action assemblies are made using state-of-the-art equipment and software. Finally, Schimmel is well informed concerning the energy impulses transmitted by the hammer heads to the strings, vital for efficient interaction between the sound-producing mechanism and the keyboard/action assembly.



Sound measurements are performed in the anechoic chamber at the Physikalisch-Technische Bundesanstalt (PTB), Brunswick.

Exact to a hundredth of a millimeter, the Schimmel CNC-controlled machining centers assure precision in wood and steel machining.

Diagram showing the stress analysis of a Schimmel grand plate under the loading of 20 tons (U.S.) of string tension.



A harmonious work flow

The internal and external harmony of Schimmel pianos is complimented by a harmoniously organized work flow. For example, in cabinetmaking and the manufacturing of the sound-producing assembly, the selection of the materials, the various steps in the production, and the necessary aging cycles must all be perfectly coordinated. This also applies to the manufacturing and installation of Schimmel keyboards and the ensuing work operations. Here, too, the various operations such as the regulation of the keyboard / action assemblies and the tuning and voicing of the instruments *etc.* occur in a harmoniously coordinated work flow.

Responsibility and creativity

First-rate employees build first-rate pianos, and at Schimmel, this knowledge is as old as the company itself. Factory training of the employees is always in conformance with the most modern production methods. Moreover, workers are thoroughly familiar with traditional work operations and techniques. Efforts to upgrade qualifications are always welcomed. Such delegation of responsibility offers management-level employees sufficient latitude for creativity. A pleasant work atmosphere has, over several decades, been created in which everyone can feel comfortable. Team spirit and employee incentives and rewards create a working atmosphere that ensures Schimmel instruments of internationally recognized quality.

The art of piano making

Since the founding of the company in 1885, the Schimmel family has directed the organization with an unmistakable character. Four generations – one passion: the combination of skilled craftsmanship, innovation and family tradition has led to excellent instruments with unique qualities. From the beginning, these characteristics have also been reflected in the appearance of the instruments with their tasteful form and design. Nikolaus Wilhelm Schimmel, who led the company from 1954 to 2002 (its third generation), created highlights that are still unrivalled to date, such as the Glass Grand Piano and the Pegasus Grand Piano, both of which have achieved iconic status. Alongside these spectacular designs, there are also timeless and sophisticated caseworks, lovingly complemented by elegant adornments, which make Schimmel so successful. Naturally, the instruments include high-quality sound performance and brilliant playing capabilities. Overall, the combination of internal and external excellence has remained for generations. Nikolaus Wilhelm Schimmel uses the occasion of his 80th birthday to create 80 limited edition instruments that continue the formula of success.

Limited Edition on the occasion of Nikolaus Wilhelm Schimmels 80th birthday

Piano manufacturing is time consuming – particularly when it comes to the details. The completed piano is only as good as the sum total of all its details, which is why Schimmel employees do not work on conveyor belts. Each one has time to do his / her job properly, as with the sanding of a grand arm shown here.

The Art and Craft of Cabinetmaking

Choice veneers
Wood is a very special material. It lives. It breathes. It is a gift of nature. Therefore, Schimmel is very careful and judicious in processing choice veneers. Experts match grain structures and colors. Piece by piece, the sheets of veneer are jointed together in a jointing machine, resulting in grain structures with a high degree of uniformity. The jointed sheets of veneer are inspected for color match and workmanship. Each individual sheet is numbered and catalogued. The art of veneer processing is a long-standing Schimmel tradition, evident in the striking beauty and unmistakable character of Schimmel pianos.

No substitute for wood
There is no practical substitute for wood, particularly when it comes to piano manufacturing. Compromises are not tolerated when it comes to sound. The same holds true for cabinetmaking. Today, Schimmel uses various types of wooden materials, including plywood and strip-core panel stock.

The seasoning (air drying) of solid-wood stock is as important for its long-term retention of value as its climatization following kiln drying.

Modern glue technology creates the basis for the manufacturing of laminated-wood stock, which in piano manufacturing is used for components requiring a high degree of durability. Photo: Strip-core stock with four under layers and two top layers of veneer, finished with multiple coats of lacquer.

Strip-core panel stock

Strip-core panel stock consists of narrow wooden strips in a vertical arrangement, stabilized by two to three layers of veneer on each side. This type of construction combines the advantages of conventional solid-wood stock with the stability of plywood stock. This type of panel stock, manufactured to Schimmel's specifications, offers a high degree of stability at a moderate weight.

Plywood stock

Unlike strip-core panel stock, plywood panel stock has a horizontal core. It consists of multiple laminations of veneer. As a rule, the grain of alternate laminations runs crosswise. A decisive factor for the quality and stability of a plywood panel is that it be built up symetrically with regard to the type of wood and thickness of the veneer sheets, the grain direction, and the number of laminations. Schimmel plywood stock is used primarily for cabinetry components, keyframe rails, and action rails. Here, too, the careful selection of materials is essential to Schimmel quality.

Solid-wood stock

Choice woods have a special aura that appeals to the senses. Exotic woods are costly and valuable. The selection and processing of such woods requires expertise and skill at the highest level. Schimmel employees possess such qualifications. Modern drying kilns and additional seasoning assure that the equalized moisture content of solid-wood stock is brought down to 6 to 8%, for long-term retention of integrity and value.

Cabinetmaking

Schimmel carefully selects choice woods, then stores them under ideal conditions. After the appropriate aging period, experienced workers fashion individual parts for precision fitting. Moistureproof wood glues ensure glue joints that hold. The edges of the cabinetry components are either veneered or provided with solid-wood edge strips.

Cabinetry and Finishes

- SHOW VENEERS
- CONDITIONING
- JOINTING OF THE SHOW VENEERS
- PLAIN VENEERS
- CONDITIONING
- JOINTING OF THE PLAIN VENEERS
- WOODEN MATERIALS
- SOLID WOOD
- CHOICE WOOD
- CONDITIONING
- PREPARATION OF THE MATERIALS
- MANUFACTURING OF THE CABINETRY COMPONENTS
- STORAGE OF THE UNFINISHED CABINETRY COMPONENTS
- ASSEMBLY OF THE CABINETRY COMPONENTS
- FINE SANDING OF THE CABINETRY COMPONENTS
- STAINING OF THE CABINETRY COMPONENTS
- LACQUERS
- PREPARATION FOR THE APPLICATION
- APPLYING THE HARDENER
- APPLYING THE LACQUER
- DRYING/HARDENING PROCESS
- SANDING THE COATS OF LACQUER
- RUBBING THE COATS OF LACQUER
- PRODUCING THE HIGH GLOSS
- STORAGE OF THE FINISHED CABINETS

Following production steps:
Uprights: page 83
Grands: page 89

- STOREROOM FOR FOLLOWING PRODUCTION STEPS
- PURCHASING OF SPECIAL COMPONENTS
- IMPORTANT WORK OPERATIONS
- INSTALLATION OF IMPORTANT COMPONENTS
- CONDITIONING PROCESS

Intarsias consist of numerous tiny pieces of veneer cut to shape. Inlaying is an art and a craft requiring a high degree of skill.

Intarsias of Schimmel grands in high-gloss African mahogany create an exquisite appearance.

Buffing…buffing…buffing…it takes time to create the mirror-like finish.

Applying a coat of black polyester lacquer

Careful buffing of the edge of a grand arm

Aging

Wood and veneer stock must be stored under controlled conditions to assure long-lasting integrity and structural stability.

Each detail is important

Each detail makes an important contribution to the quality of the product as a whole. No matter whether made of rare solid wood or high-tech particle board, of finest veneer or MDF materials, each cabinetry component is inspected after having been carefully sanded, stained, and lacquered. Numbers are then stamped on each component, for subsequently keeping the parts together during the following manufacturing steps.

Top-quality finishes

Choice veneers are costly and sanding them requires a considerable degree of skill. The sanding of wooden surfaces is an important and difficult work operation requiring a sensitive touch. Although some of the sanding is done with the aid of modern machines, much of it is still done in the traditional manner by hand.

The art of inlaying

Patience, a steady hand and a love for fine craftsmanship are much sought-after qualities when it comes to inlaying. Surrounded by modern work operations, this ancient art form has been cultivated at Schimmel since the founding of the company. Delicate decorative elements are fitted into place with the utmost of care, in such a manner that after the rubbing operation they form one single unit with the cabinet component in which they were inlaid. The various types of exotic woods form traditional patterns, intarsias of tasteful arabesques. Discreet in form and color, they underscore the respective style of the instrument and impart a subtle touch of nostalgia.

Wet on wet

The ancient art of inlaying is a stark contrast to the modern finishing materials that give Schimmel pianos their high gloss and protect the wood surfaces: polymer resins and other dual-component lacquers. High-gloss finishes require a special technique. The coats of lacquer are applied "wet on wet", *i.e.* the next coat of lacquer is applied before the previous one has fully hardened. The time interval between applications is critical for obtaining a completely uniform high-gloss finish, fully enhancing the grain structure of the choice wood or the black of an ebony finish.

Buffing

For decades now, Schimmel has been using special polyester lacquers for its high-gloss finishes. These premium lacquers produce a layer of paraffin on the surface during the hardening stage, which is later removed in a number of sanding operations, each time using ever finer grit sandpaper. Following the fine sanding, the cabinetry components are rough buffed by machine, using buffing wheels or belts and buffing compound.

The final mirror-like finish is created in the fine-buffing operation; the last traces of sanding and buffing marks are removed with rotating buffing wheels and buffing compound. Following this operation, the finish is cleaned and rubbed with liquid rubbing compound until the finish is absolutely flawless.

A flawless mahogany finish is created in several steps: First, the top layer of mahogany veneer is stained, followed by coats of transparent polyester lacquer, then sanded and rubbed with rubbing compound containing wax.

Today strenuous work operations are done by machines, even in piano manufacturing. But most of the work operations are still done by hand and still require a high degree of of skill, for example, the assembly of the heavy wooden backframe assembly of a grand.

Excellent Sound-Producing Assemblies

No substitute for experience

Excellent sound-producing assemblies are the result of a careful and perfect match between the string scale design, the soundboard, the cast-iron plate, and the back assembly. Schimmel's unique recipe for design and precision manufacturing guarantees a harmonious balance of these components for optimal tone quality.

The soundboard

The sound of a piano can only be as good as the quality of its soundboard. It converts the vibrational energy of the strings into airborne sound vibrations. It must react efficiently to string vibrations within a frequency range of below 50 Hz to above 12,000 Hz (Hz = hertz, formerly c.p.s. = cycles per second). Moreover, the soundboard must be extraordinarily stable in order to retain its crown under the load of the down bearing exerted by the strings. An extensive knowledge of soundboard spruce and its properties, growing regions, cutting dates and wood density is indispensible.

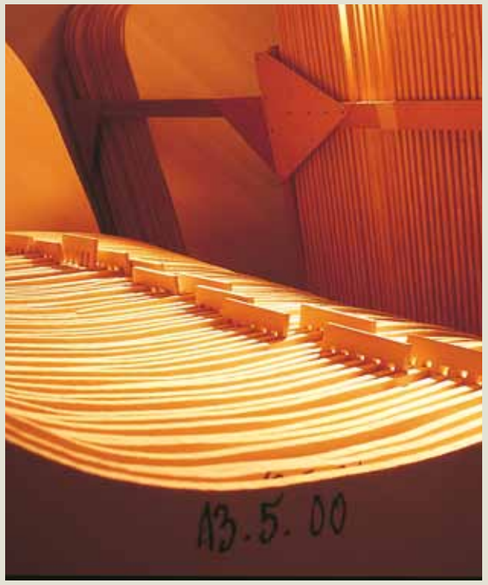
The configuration of the soundboard crown and the properties of the zones of the soundboard in proximity to the liners, the stability of the soundboard wood and its modulus of elasticity, the internal damping, the velocity of sound vibrations traveling both in the direction of the grain and across it, the location and form of the bridges and ribs, and many other factors determine the characteristic vibrational properties of a soundboard.

Curved components

The inner and outer rims of a grand piano have gradually evolved to the ideal curved form as we know it today. Multiple laminations of veneer are bent into the required shape by heavy-duty presses and are then bonded inseparably together. The selection and quality of the veneer stock used is important.

Back components

The back components include the backposts, the inner rim, the cross block, and the keybed in grands and the soundboard liners and backposts in uprights. Here, too, the selection and quality of the woods used is critical. The inner rims of grands consist of strong laminated veneers and the soundboard liners of uprights of stable beech.



Quality endures and precision requires patience. Whether bent grand rims (above, left) or soundboards (top), every important component undergoes a climatization process.

Exact to a hundredth of a millimeter, the Schimmel CNC-controlled machining centers (below, left) assure precision in wood and steel machining that can be clearly seen in the bridges (above).

Thermostabilizing

Soundboard spruce must be treated with great care. Schimmel soundboards are seasoned in a special environment, where they are bathed in a steady stream of pre-warmed air, drying the wood uniformly. Residual moisture content of the wood is then minimized in a drying kiln. This process, referred to as thermostabilizing, in combination with other traditional manufacturing operations ensures quality and stability.

Bridges

The bridges form the link between the strings and the soundboard. They perform several functions. They conduct the vibrational energy of the strings to the soundboard, exciting the various vibrational zones. The bridges also serve to terminate the strings and distribute the down-bearing force exerted by the strings throughout the soundboard. The bridges must be carefully matched to the scale design.

Finishes

Lacquer finishes are used in both the cabinetry and the sound-producing assembly. The plates of Schimmel grands are given a multiple undercoat sealer which is sanded and then finished with two coats of lacquer, the final one being high gloss. The soundboards are sanded several times and are finished with a special soundboard lacquer to protect the wood and yet assure free and efficient vibrational efficiency.

Pin blocks

Schimmel pin blocks are exemplary in piano manufacturing. After all, their laminated construction was developed by Schimmel in the mid 1950's. Schimmel sets high standards for pin-block stock. It must be of outstanding quality, having a certain specific gravity and moisture content, and the glue joints must be impeccable. The laminations of beech veneer are cross-banded, to better grip the tuning pins and ensure a high degree of tuning stability over a long period of time.

The Sound-Producing Assembly

GRANDS

- SOUNDBOARDS, RIBS
- THERMOSTABILIZATION
- FORMING THE SOUNDBOARDS
- CROWNING THE RIBS
- BRIDGE MANUFACTURING
- COMPLETING THE SOUNDBOARDS
- TONEWOOD, VENEER WOOD
- BENDING THE INNER RIMS
- PREPARING THE BACKPOSTS
- ASSEMBLY OF THE BACKS
- MILLING THE SOUNDBOARD LINERS
- ASSEMBLY OF THE SOUNDBOARDS AND BACKS
- CONDITIONING PROCESS
- CAST-IRON PLATES
- DRILLING, LACQUERING
- PIN-BLOCK STOCK
- SAWING THE PIN BLOCKS
- PLATE SETTING
- SPECIAL WIRES (COPPER, STEEL)
- WINDING THE BASS STRINGS
- STRINGING, FIRST CHIPPING
- CONDITIONING PROCESS
- VENEER STOCK
- PREPARING THE VENEER STOCK
- BENDING THE OUTER RIMS
- AGING PROCESS
- PREPARING THE KEYBEDS
- COMPLETION OF THE SOUND-PRODUCING PORTIONS
- AGING PROCESS
- FINISHING THE GRAND BODIES
- AGING PROCESS

Continuation: page 89
Action setting
Installation of the cabinetry components

UPRIGHTS

- SOUNDBOARDS, RIBS
- THERMOSTABILIZATION
- FORMING THE SOUNDBOARDS
- CROWNING THE RIBS
- BRIDGE MANUFACTURING
- COMPLETING THE SOUNDBOARDS
- TONEWOOD
- PREPARING THE BACKPOSTS
- PIN-BLOCK STOCK
- SAWING THE PIN BLOCKS
- ASSEMBLY OF THE BACKS
- MILLING THE SOUNDBOARD LINERS
- ASSEMBLY OF THE SOUNDBOARDS AND BACKS
- CONDITIONING PROCESS
- CAST-IRON PLATES
- DRILLING, LACQUERING
- PLATE SETTING
- SPECIAL WIRES (COPPER, STEEL)
- WINDING THE BASS STRINGS
- STRINGING, FIRST CHIPPING
- AGING PROCESS

Continuation: page 83
Action setting
Installation of the cabinetry components

- PURCHASING OF SPECIAL COMPONENTS
- IMPORTANT WORK OPERATIONS
- INSTALLATION OF IMPORTANT COMPONENTS
- CONDITIONING PROCESS

Heavy molding boxes are used for casting grand plates (above, left)

Wherever machines can take over strenuous work operations, Schimmel spares no expense. An example of this is the machining center for cast-iron plates (above, right).

Wherever quality requires hand craftsmanship, Schimmel spares no effort. The stringing operation requires special care (left).

Cast-iron plate

The Herculean task of bearing the approximately 20 tons (U.S.) of tension exerted by the strings, over 200 in number, is assigned to the heavy cast-iron plate. The foundries that cast Schimmel plates must have state-of-the-art equipment. The plates are machined and finished to close tolerances at the Schimmel factory. More than 400 holes are drilled to a tolerance of less than 0.1 mm. The capo d'astro bar is carefully shaped and surfaced, and premium grade agraffes and a multitude of pins are installed.

Scale design and tonal character

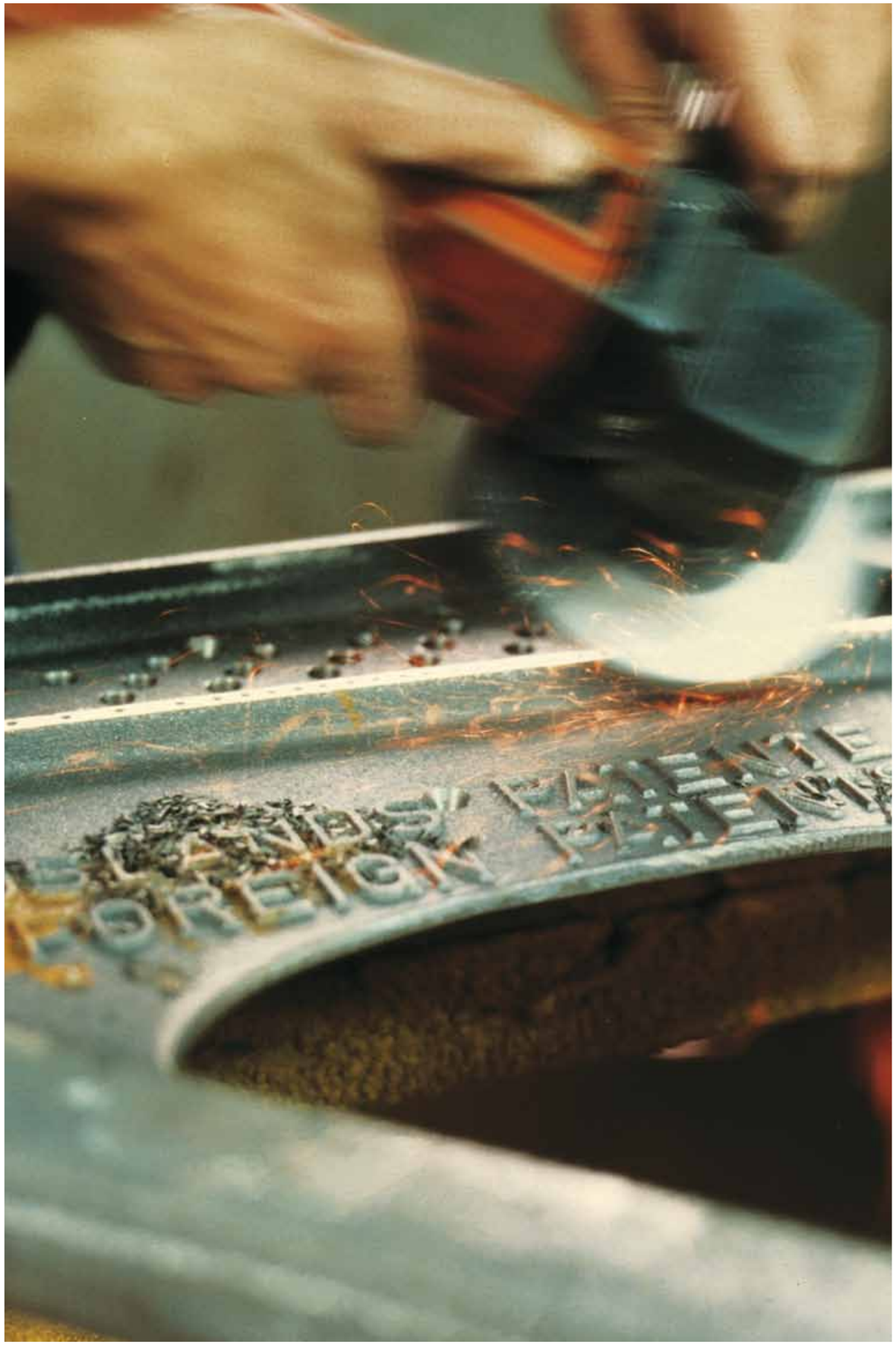
The calculation of the string speaking lengths, diameters, tensions *etc.* and the determination of the string layout are referred to in the piano industry as "scale designing". A good scale design imparts to a piano its natural tonal character and timbre and enables the discerning pianist to shape sound. Electronic keyboard instruments cannot perfectly imitate this living sound which has evolved over a period of centuries.

Each string is individually calculated for breaking strength, mass, modulus of elasticity and impedance of the material, as well as inharmonicity. These interrelated factors are computer-optimized by Schimmel's own CAPE software.

20 tons of tension

A perfect sound-producing assembly consists of a fine soundboard, a solid backframe assembly, and a strong cast-iron plate that form a single unit. While the plate bears the approximately 20 tons (U.S.) of string tension, the soundboard must retain its crown despite the down-bearing force exerted by the strings. This balance of forces reacts to changes in relative humidity due to the progression of the seasons. Wood is a hygroscopic material that expands and contracts with humidity changes, causing string tension to go up and down. This is why pianos must be regularly tuned.

The installation of the heavy cast-iron plate in a grand is a painstaking hand operation referred to as "plate setting", which can only be done by experienced experts. Its positioning in relation to the bridges and pin blocks must be accomplished with extreme precision. Other important criteria are the correct height of the plate in relation to the heights of the bridges for correct down bearing, as well as a tight fit to the pin blocks.



Tone quality is the result of know-how and precision at all stages of the production process. Which is why at Schimmel care is cultivated everywhere – as in the checking of the height of a bridge in relation to the plate (above) and the first-chipping operation (below).

If the soundboard is the soul of a piano, then the strings are the source of the sounds that it produces. Their subtle and complex vibrational patterns are the origin of classic piano sound. Each piano has over 220 strings, each with its own individual speaking length, diameter and tension. Piano manufacturing is truly an art and a craft.

Strings

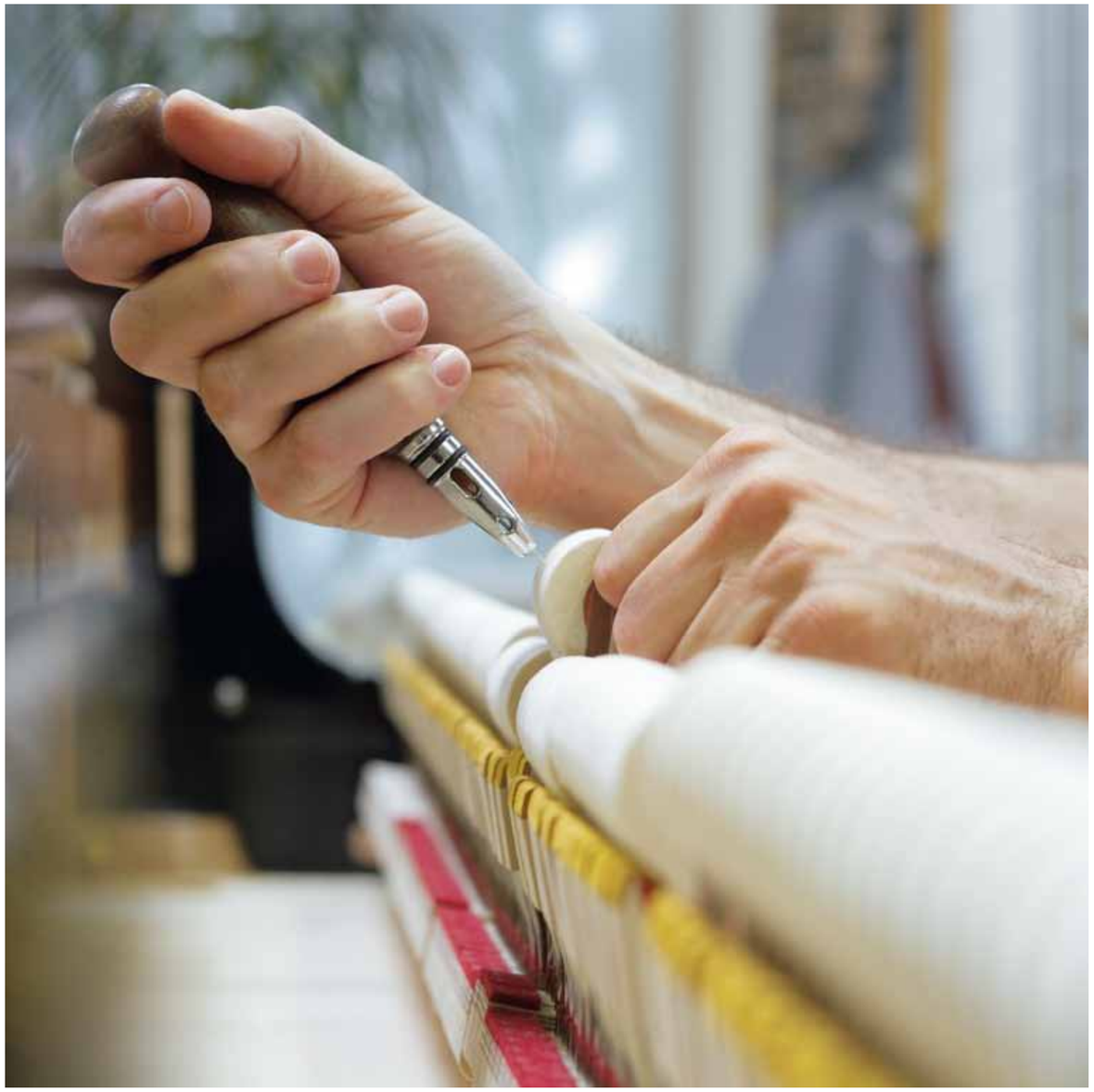
Piano strings must be properly tensioned. Each individual string must withstand a tension of approx. 70 kg to 80 kg (70 kg = 154 lb., or 696 newtons) or more. High-strength steel wire, produced in both round and hexagonal cross section is made especially for the piano industry. The specifications are no less exacting for the copper wire used for bass-string windings. The many wire sizes available for both the steel core wire and the copper winding wire for the bass strings permit a virtually infinite number of possible combinations. Schimmel uses its own computer software in calculating scale designs in addition to the knowledge and experience gathered over a period of four generations.

Stringing is a machine-assisted manual operation at Schimmel. This method of stringing, developed by Schimmel in the late 1960's, is now in almost universal use in the German piano industry.

First chipping

Both upright and grand strung backs are first chipped almost immediately after being strung. The term "first chipping" refers to two very rough tunings, in which the strings are brought up to pitch for the first time. Since neither the keyboard nor the action has been installed yet, the strings are plucked. (This was originally done with a chip of wood, hence the name.)

Both uprights and grands are aged following the first-chipping operation. This permits the strings under tension to stretch. It also allows both the strings and the back to stabilize to a certain extent prior to the second-chipping, which is followed by the action "setting" (installation), which is described in the following two sections. Aging is one of the quality features of Schimmel's manufacturing process. (The complete stabilizing process takes about two years, which is why new pianos need to be tuned more often than usual.)



Hammers are individually "voiced" with needles to fine-adjust the elasticity of the felt of each of the 88 hammers so as to produce the best possible sound – the unmistakable Schimmel sound which bears the hallmark of hand craftsmanship.

Schimmel Uprights are Masterpieces

Hand craftsmanship
The fine, balanced sound of a Schimmel upright is the result, not only of fine hand craftsmanship, but the high quality of the materials used at Schimmel. Although much of the work is assisted by modern machines, wherever appropriate, artistry and hand craftsmanship work together.

Schimmel keyboards
Schimmel is one of the few piano manufacturers producing its own keyboards, both for grands and uprights. There are good reasons for this, one of which is that the leverage ratios of all keys must be precisely matched to the corresponding Schimmel models. Schimmel keyboards are made better by the precision of computer-controlled machines. Schimmel keyboards are superior because of carefully selected wood stock, specially developed capstan screws, special keyboards felts, and a thermo procedure for gluing the felt bushings in the holes for the front- and balance-rail pins.

Inspection and aging
All Schimmel supervisors are master craftsmen. They inspect each keyboard for precise leverage ratios, the correct positioning of the keys in relation to each other, correctly balanced keys, uniform key spacing, and the workmanship of the key bushings. The inspection also includes the key coverings and the sides of the keys. After the keyboards have passed this inspection, they are aged. It is a fact of life that quality takes time.

Hammer heads
The model of his new hammer action presented by Bartolomeo Cristofori in March 1698 to his prince and patron already worked on the pushing principle. Many clever inventors improved on the hammer action with its complex system of levers over a period spanning three centuries. The quality of the hammer heads also improved gradually. The outstanding sound of Schimmel pianos is due, in no small degree, to the ideal hammer heads. The density and weight of the felt, internal stresses and resilience, the type of wool and its processing, the correct cutting and shaping of the felt – each and every one of these factors is of significance for optimum energy-transfer properties of hammer heads.

Action setting
The correct point of contact between the capstan screw and the whippen cushion is critically important. A fraction of a millimeter can make a difference. The installation of the hammers and the dampers is a delicate operation. Correct positioning in relation to the strings and reliable functioning are of decisive importance for the sound pattern, the tone quality, and the dynamic modulation.

Each individual key is, of course, carefully balanced. In the photo we see a test weight on the front half of the key and two key leads which will later be inserted into it's the back half.

The gluing and alignment of hammers (left).

The key dip is set by inserting paper punchings of different thicknesses- with tender loving care and to an accuracy of a tenth of a millimeter.

Platform

The union of the sound-producing assembly and the keyboard/action assembly results in a unit referred to at Schimmel as a "platform". The platform consists of the insides of the piano, without the cabinet and trapwork, and it can be played.

First regulation

The first, or "rough", regulation is a first general coordination of the individual levers in the keyboard/action assembly. This operation includes the spacing and easing of all 88 keys, the final alignment of the dampers and hammer heads with the strings, the traveling of the hammers, the setting of the hammer-blow distance, the adjusting of the capstan screws and the hammer letoff, and the setting of the touch weight, a decisive factor for the "feel" when playing the instrument.

First tuning and voicing

The first, or rough, tuning (actually the fourth tuning, counting the three chippings), is performed with the keyboard/action assembly installed. This operation prepares the instrument for the voicing procedure that follows. Voicing is performed by systematically stabbing the hammer heads with fine-gauge needles, altering the tension of the felt, resulting in a pleasingly balanced tone. The location, direction, depth and frequency of the stabs determine the tonal character which the instrument will later have, whether bright or mellow.

Repeated aging between the individual chippings and tunings is important for action and tuning stability. The piano is eventually "played in" by an automatic pianoplaying machine to further stabilize the instrument.

Trapwork

The trapwork consist of the pedal system. A stable bottom board supports the entire trapwork system of the upright piano, from the three peals to the levers and rods connecting the pedals with the action. It is important that the trapwork assembly be noise free and efficient.

Individuality

Schimmel uprights are available in a variety of heights, styles, colors and finishes. Each instrument is produced individually. The finished piano consists of the platform after the cabinet is finally bonded to it. Each Schimmel upright is a strikingly beautiful and individual creation, whether it be an ebony or white finish, or a choice veneer finish, in satin or high-gloss.

Upright Pianos

- SOUND-PRODUCING UNIT (see page 75)
- THIRD CHIPPING
  - KEYBOARD
  - AGING PROCESS
  - TRAPWORK
  - PRE-ASSEMBLY
- ASSEMBLY OF THE SOUND-PRODUCING UNIT, KEYBOARD AND TRAPWORK
  - HAMMER ACTION
  - THERMOSTABILIZATION
  - PREPARATION
- ACTION SETTING
  - HAMMERS, DAMPERS
  - PREPARATION
- INSTALLATION OF THE HAMMERS AND DAMPERS
- FIRST REGULATION OF THE KEYBOARD-AND-ACTION ASSEMBLY
- FIRST TUNING
- ROUGH NEEDLING OF THE HAMMER HEADS
- AGING PROCESS FOR THE PLATFORM*
  - CABINETRY COMPONENTS (see page 69)
- MARRIAGE OF THE PLATFORM AND THE CABINET
  - TWINTONE
  - INSTALLATION OF TWINTONE (ONSPECIAL ORDER)
- SECOND REGULATION OF THE KEYBOARD-AND-ACTION ASSEMBLY
- SECOND TUNING
- FINE VOICING
- FINAL INSPECTION OF THE CABINETRY
- FINAL TECHNICAL INSPECTION

* Platform = sound-producing unit + keyboard-and-action assembly, without the cabinet and trapwork

- PREVIOUS STAGE OF PRODUCTION
- PURCHASING OF SPECIAL COMPONENTS
- IMPORTANT WORK OPERATIONS
- INSTALLATION OF IMPORTANT COMPONENTS
- CONDITIONING PROCESS

Alignment of the damper drums, to which the felt damper heads, will later be glued (above).

Repeated inspections are made (above, right).

Gluing the damper heads to the damper drums. They must be precisely aligned with the strings and the job must be done right the first time around (right).

Playing the piano at any time of the day or night without disturbing others – a dream that can come true with the Schimmel TwinTone *grands and uprights, both with the option of being played silently through headphones.*

Final tuning
The second, or final, or fine tuning of an upright is actually the fifth tuning. This is done in soundproof booths by experienced aural tuners. Undisturbed by background noise, they can devote themselves fully to each instrument.

Second regulation
The second, or final, or fine regulation again requires great skill, a sure eye and care. The keyboard/action assembly now receives its last fine adjustment. All the lever elements are once again adjusted and checked for proper function and the alignment of the dampers and hammers is "tweaked". The easing and spacing of the keys, the movement of the hammers (traveling, blow distance, letoff and checking), the various damper functions, the movement of the keys (key dip, resistance point, aftertouch) and the touch weight (static touch weight, key lift, dynamic touch-weight characteristics) are inspected.

Inexhaustible richness of sound
The richness of sound of fine pianos and the individual possibilities of shaping it are inexhaustible. Pianists and lovers of piano music know this. Many factors "vibrate" together, in the literal sense of the word. Partial-tone spectrum, inharmonicity, attack, steady state, and decay are all technical terms that apply to the science of acoustics, but together, they make up the unique, balanced sound of a piano. The beauty and creative richness of the sound of a piano can only be developed to its full potential when the hammer heads are ideally matched to their respective strings and to the soundboard. This is achieved by the fine-voicing operation which follows.

Final inspection
Artistry and craftsmanship have always complemented each other in the production of stringed keyboard instruments. This was so with clavichords, harpsichords and the first pianofortes, this was so when Wilhelm Schimmel founded his company, and this continues to be so at Schimmel today. No instrument leaves the factory without a final inspection by a master craftsman. The purchaser of a Schimmel piano can be confident of acquiring a world-class instrument.

Practice pedal
It is not always appropriate to practice at full volume Most Schimmel upright are provided with a muffler rail (céleste), which is activated by depressing the practice pedal (middle pedal). Felt strips are lowered between the hammers and the strings to reduce the volume of sound.

Piano music filling the room or whispering in your ears
Schimmel TwinTone grands and uprights represent two instruments in one: A traditional acoustic piano with all features fine Schimmel instruments offer and an integrated "Quiet-Play-Feature" allowing piano playing at any time of the day or the night through headphones. This factory installed "double TwinTone feature" is offered with almost any Schimmel grand or upright. Schimmel TwinTone instruments are equipped with YAMAHA CORPORATION'S SILENT™ Piano Sound Muting System. This product offers a fine piano sound from digital stereo sampling, polyphony for complex playing, adjustable reverb characteristics more.

MIDI – the magic word of musical electronics
The electronic digital-piano unit in each Schimmel TwinTone Piano is provided with both MIDI IN an MIDI OUT interfaces, enabling all MIDI- compatible electronic musical instruments, special-effect units, and music software to be commanded by the keyboard of the Schimmel TwinTone Piano. The digital electronic piano of the Schimmel TwinTone Piano can be played remotely from any electronic keyboard instrument with a MIDI OUT interface.

Shimmering beauty. Illuminated by spotlights in various different colors, the Schimmel grand with acrylic plastic cabinetry has been the star of many a TV show and is a masterpiece of German piano manufacturing in both sound and design.

SCHIMMEL GRANDS – PERFECTION IN ARTISTRY AND CRAFTMANSHIP

Made by Schimmel
There is no substitute for tradition and experience when it comes to the manufacture of fine pianos. Wilhelm Schimmel, founder of the company, had a vision. The quality of his instruments was first and foremost. Today, at the dawn of the Third Millennium, nothing has changed. Schimmel continues to devote all its efforts to the quality of its instruments. The competence and qualifications of the Schimmel staff are indeed valuable assets for guaranteeing top-quality workmanship.

A treat for the eye and ear
The curved form of Schimmel grands is in conformance with the ideal which has evolved over the past three hundred years. Whether the Cabinetry is an ebony or white finish or of choice veneers, whether is a satin or high-gloss finish, Schimmel grands are a treat not only for the ear, but the eye as well.

The foundation of excellent tonal properties
The sound-producing assembly of a Schimmel grand is its foundation. It is manufactured in the traditional manner and consists of the soundboard, including the ribs and bridges, the back assembly, consisting of the inner rum, the backposts centered in a metal “shoe” and the cross block, the heavy cast-iron plate, the pin block and over 200 strings.

The keybed
The keybed contributes to the stability of the soundproducing assembly of a Schimmel grand. It is made of choice soundboard spruce. A special sandwich construction guarantees its stability. This is significant because the keybed, due to its direct connection with the cross block and the backposts, must absorb considerable forces interacting throughout the overall structure of the sound-producing assembly. The bonding of the outer rim to the inner rim and the installation of the keybed require a high degree of skill and must be accomplished with extreme precision. The vertical distance from the keybed to the strings must be in exact accordance with the specifications of the keyboard/action assembly.

Finishing
Schimmel grands are famous the world over because of the beauty of the cabinetry. The rubbing operation is unique and requires special attention to detail. The process cannot be rushed. The veneers are stained and each coat of lacquer is applied. Although most Schimmel grands are produced in the classic version of high-gloss black finish, referred to as the “ebony finish”, they are also available in white and in choice veneers, in a variety of colors, styles, and finishes.

All keys must be perfectly leveled (above) and the key dip exactly to specification (left).

The instrument becomes playable
The cabinet is finished while the first chipping ages. Then the strings are rubbed and the instrument is second chipped, the chipper going over it twice. The keyboard/action assembly and the damper action are installed are first regulated while the second chipping ages, giving the strings and the back assembly time to adjust to the enormous stresses. Now the instrument is playable and ready for the next operation – first tuning (or fifth tuning, counting the two double chippings), in which it is tuned for the first time using the keyboard and action.

"Do it in-house"
This was the policy of the founder of the company. Schimmel strives to avoid purchasing componentry from outside suppliers. Schimmel manufactures most of its own grand keyboards. This offersv a number of advantages, as previously mentioned. Schimmel grand keyboards also boast other outstanding features, such as computer-optimized key balancing, thermostabilized key bushings, a flexible keyframe, enabling it to be fine-adjusted to the keybed, hardwood inlays in the keys, felts of select quality, nickel-plated guide pins, and special balance-rail studs.

Schimmel takes the time
Every effort is made in the early stages of manufacture to ensure that all the keys are correctly seated for freedom of movement. The sensitive hands of the pianist must not feel any irregularity. Prior to installation, the keyboards undergo a controlled aging process. All the capstan screws must be precisely aligned with the whippen cushions and the hammer heads aligned with their respective striking points on the strings.

Trapwork
Every pianist knows how important perfectly and noisefree functioning pedals are for the interpretation of music, whether classical, pop or jazz. The sustaining pedal (right) affects the damping characteristics after the keys are released and the una-corda pedal (left) controls the volume and character of the sound. The sostenuto pedal (middle) sustains individual notes after the corresponding keys are released.

Una-corda pedal
The una-corda pedal causes the entire keyboard/action assembly to shift slightly to the right, allowing each hammer to strike only two strings of each three-string unison. The contacting surfaces of the keyframe and the keybed are carefully matched to each other to assure a smooth, noisefree shift.

Sostenuto pedal
The sostenuto function is activated by depressing the middle pedal. All dampers which are raised at the time the pedal is depressed remain in their raised position for as long as the pedal remains depressed. All other dampers freely return to their rest position, damping the strings.

Grand Pianos

- SOUND-PRODUCING UNIT (see page 75)
- SECOND CHIPPING
  - KEYBOARD
  - AGING PROCESS
  - DAMPER ACTION
  - HAMMER ACTION
  - THERMOSTABILIZATION
  - PREPARATION
- INSTALLATION OF THE DAMPER AND HAMMER ACTIONS
  - DAMPER AND HAMMER HEADS
  - PREPARATION
- COMPLETATION OF THE KEYBOARD / ACTION ASSEMBLY WITH DAMPER AND HAMMER HEADS
- CONDITIONING PROCESS
  - TRAPWORK
- TRAPWORK INSTALLATION
- FIRST REGULATION OF THE KEYBOARD / ACTION ASSEMBLY
- FIRST TUNING
- ROUGH NEEDLING OF THE HAMMER HEADS
- PLAYIG IN OF THE KEYBOARD / ACTION ASSEMBLY
- SECOND REGULATION OF THE KEYBOARD / ACTION ASSEMBLY
- SECOND TUNING
- SECOND VOICING OF THE HAMMER HEADS
  - INSTALLATION OF EXTRAS
  - CABINETRY COMPONENTS (see page 69)
- FLY FINISHING
- FINAL REGULATION OF THE KEYBOARD / ACTION ASSEMBLY
- FINAL TUNING
- FINAL VOICING OF THE HAMMER HEADS
- FINAL INSPECTION OF THE CABINETRY
- FINAL TECHNICAL INSPECTION

- PREVIOUS STAGE OF PRODUCTION
- PURCHASING OF SPECIAL COMPONENTS
- IMPORTANT WORK OPERATIONS
- INSTALLATION OF IMPORTANT COMPONENTS
- CONDITIONING PROCESS

Fortissimo or pianissimo, fine-needling of the hammers makes it possible (left).

Each key is individually balanced (right, above).

The static touch weight must be exactly right (right, below).

Piano manufacturing is comparable with watchmaking, for example, the regulation of the drop screws in a grand keyboard-and-action assembly (left).

Regulating the hammer letoff (below)

A perfectly functioning keyboard and action

Fine pianists, with their fine sense of touch, can feel the slightest movement of the hammers in their fingertips. The piano can only respond perfectly to the slightest variations in pressure exerted by the pianist's fingers if it is built with a perfectly functioning keyboard/action assembly. Ideal touch and playability is imperative to the concert performer. Due to the ideal horizontal arrangement of the grand piano action, the entire weight of the hammers rests on the keys and the pianist can directly feel the response of each hammer.

Dampers

Dampers are absolutely essential. Each key, when depressed, lifts a corresponding damper. The sustaining pedal, when engaged, lifts all the dampers at once. The dampers can effectively damp the string vibrations only when they function reliably. Each damper must be precisely fitted to its string or string unison, which requires that they be installed with the greatest of care. The size, weight and seating of each individual damper head must be exactly right and the damper felts must be of top quality. The felt must have the ideal hardness and orientations of the fibers. Schimmel grands have five different variations of damper felts to assure smoothness and efficiency of damping.

Durability

A grand keyboard/action assembly must be able to stand up to fortissimo playing. Each and every grand action undergoes a rigid inspection before it is installed. The wood must be of top quality, the reputation springs must have the correct tension, the center-pin bushings must be stable and free of excess friction, and the positioning of the action correct in all three dimensions. Precision action setting exerts a decisive influence on subsequent regulation and voicing procedures.

Hammer heads

The hammer heads are among the most important parts of the action. Schimmel uses only the best. The hammers are inspected for the properties of the felt that determine the sound (type of material and its origin, form, size, weight, and felt tension). Schimmel hammer heads have the correct balance between internal stresses and resilience, to enable a pleasant, shapable tonal character throughout the entire compass of the instrument, from the softest pianissimo to the most powerful fortissimo.

Hammer head installation

The gluing of the hammer heads to the hammer shanks requires patience and a sure eye. The exact location of the hammer striking point is critical for optimum energy transfer and ideal partial-tone spectrum. Correct striking angle and traveling of the hammers is also critical for optimal energy transfer. The face of the hammer head must be exactly parallel to the plane of the string unison.

The secret of last repetition

"Repetition" refers to the ability of the key and action to strike a subsequent blow as quickly as possible. The secret lies in the butterfly repetition spring, the tension of which is increased when the hammer rebounds from the string(s), enabling the jack to return to its "firing position" under the hammer knuckle at the slightest upward movement of the key. The repetition spring tension must be precisely set for each note individually, a procedure requiring patience and skill.

The back check is also a part of repetition. Its purpose is to "check" (catch and hold) the hammer at approximately its half-stroke position after it bounces back from the string(s), to keep it from "stuttering". The back check must be set at a precise position and angle to make secure and controlled catches, yet immediately release the hammer tail as soon as the key begins its return and repeat (upward) movement.

The term "hammer drop" refers to the first point at which the hammer comes to rest during its upward movement when the key is depressed very slowly. This point is an important criterion for the return of the jack under the hammer knuckle, and hence for the outstanding performance that grand actions offer both in the way of repetition and dynamic-modulation capability.

First regulation

No component of a Schimmel grand passes from one work operation to the next uninspected. Frequently the same operations are repeated with ever-increasing precision. This requires patience and a love for hand craftsmanship. The keys are checked for correct friction and freedom of movement, spaced and leveled, properly "weighed-off" (i.e. the setting of the touch weight of each individual key) and the setting of the key dip, the hammer-blow distance, and the letoff. All these regulation procedures are done by hand. Then, the instrument is playable for the first time and the first tuning and first voicing, or rough needling, are performed.

First tuning and aging

The first-tuning operation (or fifth tuning, counting the two double chippings), is performed with the strings being sounded by the keyboard/action assembly. The tuner uses heavy, repeated blows, which have a profound stabilizing effect, "setting" the strings. The first tuning is followed by s further aging, beginning with a "playing in" by an automatic piano-playing machine. This serves not only to stabilize the regulation operations carried out up to this point, but also supports the time-consuming processes in which the internal stresses and behavior of the individual materials in the back and the hammers adjust to each other.

"Burning" (heating) the hammer shanks to make them flexible, enabling the fine adjustment of the hammer striking point and angle.

Cabinetry assembly

The cabinetmakers assemble the individual cabinetry components piece by piece. The two-piece top, including the lock rail and the long and short topsticks, the music desk, the fallboard, the keyslip, the legs, the pedal lyre, and any individual decorative elements are all installed. Schimmel fits each grand with a unique hydraulic mechanism to keep the fallboard from slamming shut accidentally.

Second regulation

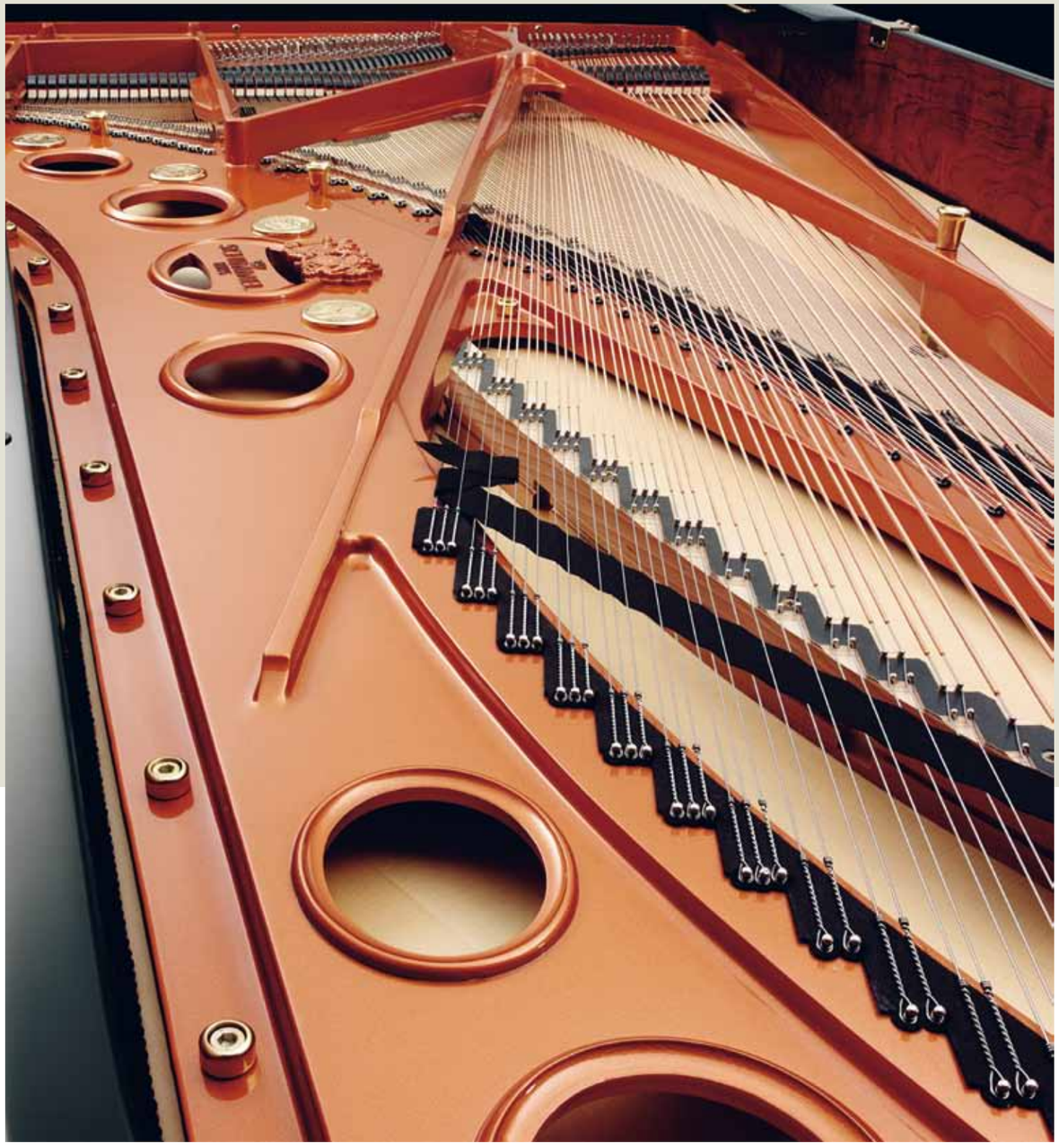
Many procedures are performed multiple times. Tuning, voicing, and keyboard/action regulation operations are "tweaked". Keys are again inspected for freedom of movement and checked for positioning in relation to each other. The key leveling and key dip must be correct and the playability of the instrument as a whole must be reliable at all dynamic levels. The second regulation also includes an inspection, and tweaking where necessary, of the letoff, the "(hammer) drop", the checking of the hammers, and the repetition. These regulation operations all take time, skill, and patience.

Second tuning

The second, or final fine tuning (or sixth tuning, counting the chippings), is done at Schimmel by an experienced ear tuner. Electronic tuning aids with a visual display are available to assist the ear, but the eye can never replace the ear. Generally, modern-day tunings are done according to the 12-tone equal temperament, in which the semitone intervals are in a ratio of 1: $\sqrt[12]{2}$, with A_4 (A above Middle C) tuned to a frequency of 440 Hz (cycles per second). The interval ratios remain constant, but the size of the respective intervals increases progressively, doubling with each higher octave.

According to one top expert on historical tunings, Owen H. Jorgensen, in his book *Tuning*…, the theory of equal temperament dates back to the twenty-seventh century B.C. in China. Eighteenth-century European mathematicians were able to calculate monochord string lengths and the fretting distances for lutes for the 12-tone equal temperament to a high degree of accuracy, but an aural method for constructing it on a keyboard instrument had not yet been devised. Skilled piano tuners have been able to do so by ear with mathematical precision since about 1917, organ tuners since about 1810. Prior to that, keyboardinstrument tuning was a pure art and various unequal temperaments were used.

Today, tuning is an exact science and skilled tuners produce an identical equal temperament on the same make and model of piano, whether with or without an electronic aid. Unlike the tuning of an organ or electronic instrument, a piano tuning must be modified to adapt to the inharmonicity (progressive sharpening) of the overtones. The aural tuner does this instinctively. An electronic tuning aid must be repeatedly readjusted during the tuning, and techniques for doing so have been developed. Modern aids have a builtin computer or preprogrammed tuning curves for optimizing the tuning. In a comparison test with a purely aural and an electronically asisted tuning conducted at a recent Piano Technicians' Guild annual convention in America, the test audience rated both tuning excellent.



The Schimmel grand series K 219 embodies perfect tonal characteristics.

Second voicing

To quote from a Schimmel Silver Jubilee publication from the year 1910: “The work is finished”. Today, the work is finished after the voicer has given the instrument its “finishing touch”. The piano must be in perfect tune for the voicer to create the beautiful tonal character of a Schimmel grand. Each individual hammer is fine-needled and -sanded. This operation also includes an inspection (and, if necessary, a correction) of the leveling of the hammer heads and the strings, the striking points, the string bearing points, the tuning, and the regulation.

Final inspection

The range of the dynamic-modulation capability of a Schimmel grand extends from a whispering pianissimo to a thundering fortissimo. Pianists expect balance tonal characteristics throughout the entire compass of the instrument at all loudness levels. Only an experienced master piano builder performs the final inspection. He pays particular attention to the sound. It must be rich and beautiful, yet warm and capable of dynamic modulation. The keyboard/action assembly must have a uniform touch weight and key dip, reliable hammer checking, fast repetition and a good aftertouch feeling. In short, playing on a Schimmel grand must be a pleasure for years to come.

A good investment

A Schimmel grand provides its owner with many years of reliable service. It is a good and sound investment. But you do not have to take our word for it. You owe it to yourself to pay a visit to your local authorized Schimmel dealer and try our instruments out and experience for yourself the joy of playing on a Schimmel piano.

Schimmel grand piano K 219 Tradition, ebony finish (2013)

A MUSIC CRITIC'S PERSPECTIVE

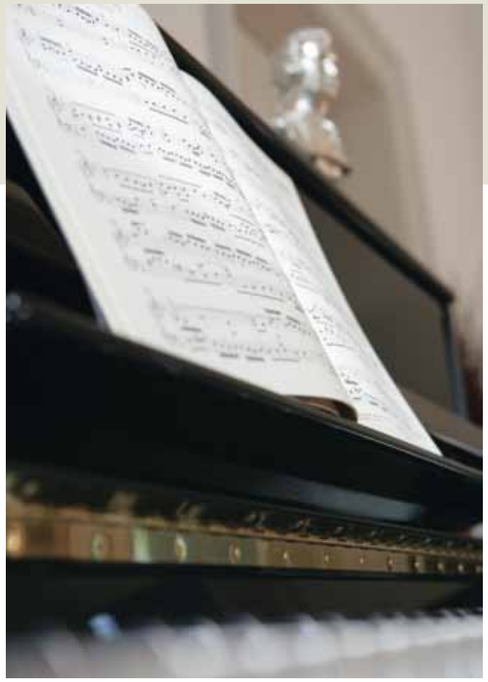
by Rolf Heckelsbruch

Sometimes when I'm sitting in a concert hall a picture comes to mind. I'm listening to, watching, and admiring how a pianist is interpreting one of the great piano compositions. I'm trying to mentally absorb the structure and depth of thought of the work, but it's so easy to get carried away by the magic of these sparkling arabesques and the poesy of the sound, by the virtuosity of fluent runs, by the glittering arpeggios, and the ponderous, vigorously thundering chords. In my mind's eye I'm reading the metaphor, so popular with music critics, of the "grabbing paws" of the pianist. I hear the applause swell up, sometimes including enthusiastic bravos, calling for not just one, but even two or three encores. I see the artist, one hand resting in the piano taking a bow, whether a cursory one or a long, deep one with theatrical grandezza. I see the performer, basking in the tumultuous ovations, smiling, whether happily, gratefully or just to be polite – who knows? Perhaps the serious facial expression is in anticipation of the loneliness of the awaiting hotel room. The artist is either standing alone on the podium, or together with the orchestra in a semicircle, members discreetly tapping on their instruments with their bows, while the conductor shakes the performer's hand.

Then another picture comes to mind. I see those who aren't in the limelight. These individuals are not really bitter, as was Bertolt Brecht: "Because some are standing in the darkness, and the others are standing in the light." They simply are not in the limelight and remain behind the scenes. Some perhaps do not expect the recognition and even prefer not to be in the limelight. Nevertheless, I see many individuals whose work behind the scenes will never be acknowledged in a concert hall. Of course, I am referring to the many people associated with the piano manufacturing industry. I refer to the artisans that build

these wonderful concert grands, in which soloists find fulfillment in music. I refer to the instruments which unfold under the hands of the pianist their full, rich sound, whether in a classicalmusic concert, a jazz session or a pop concert. These are the instruments which can reproduce the finest pianissimo, the tuning of which holds up to any “pianist paw,” the flawlessly functioning keyboard and hammer action of which serves to produce a perfect sound. These instruments were created by people who are piano builders by profession. Certainly the piano building profession can be learned, whereas a performance career must extend far beyond all learnable playing techniques into those areas which simply can’t be learned – talent, intuition, creativity, personal aura, sometimes even genius.

However, it is not my purpose here to compare the craftsman, as competent as he might be in his profession, with the artist. They can’t be compared. I merely want to point out that since the invention of the first pianoforte over three centuries ago, piano builders have built pianos following all the rules of their art and craft, with all the conscientiousness and skill demanded by their profession. To be sure, pianos have become ever more perfect in sound and playing characteristics, thus creating more than ever before the prerequisites for great artists to display unprecedented keyboard virtuosity. Undoubtedly, there are countless numbers of extant piano compositions without which the world of music would have been infinitely poorer.



They have remained anonymous, these innumerable piano builders, with the exception of the most ingenious among them, who, with their inventions and improvements over the past three centuries, have advanced the art of piano building to its present state of perfection. Some such names are found on the fallboards of pianos whose founders, family members, and employees introduced such inventions and improvements.

The early pianoforte carried the stigma of being a "mechanical" instrument. After all, unlike bowed stringed instruments, its sound was produced mechanically. It would be several years before that stigma would be shed and a legend could evolve, as it were, around the piano. Piano builders did not cultivate a legend like the violin makers. The legend of Stradivari and his imprisonment and the special lacquer that he used is one of mystique and romance, the secret of which is from time to time "rediscovered."

Piano builders are scarcely in a position to offer "romanticisms" such as this. Developments always took place on a more circumspect, pragmatic level. These craftsmen pondered over technical improvements, leverages, the pushing or bumping principle, the use of metal in back construction, string scales, with or without overstringing, the optimum designs for bridges, hammers and soundboards. The many steps in the evolution of the piano described and illustrated on the preceding pages of this booklet help tell the story. This isn't the stuff that makes legends and myths. Moreover, the piano won over not only the concert halls, but the salons of the nobility and the rich and, by the nineteenth century, the parlors of the middle class. The piano as a vogue instrument was always good for a satire or a brilliantly witty series of drawings, such as *Der Virtuos* by Wilhelm Busch. The piano would eventually become the world's most popular musical instrument thanks in no small part to the many unknown piano builders who have made important contributions. The French author, music enthusiast and Nobel Prize winner André Gide expressed his conviction in his Remarks on Chopin: "The piano surpasses the orchestra like the individual surpasses the mass." The dawning era of the virtuosos saw the likes of such piano legends as Chopin, Liszt, Thalberg, Dreyschock, Herz, Moreau, Gottschalk, just to name a few. Facts and fiction, evaluation and appreciation, anecdotes and colportage, not only on the sensational finger dexterity of the "keyboard lions" of the early nineteenth century, but on their narcissistic theatrics and shortcomings as well, fill volumes. And what wouldn't we give to have their playing preserved on phonograph records! The history evolves through Clara Schumann and beyond, into the twentieth century with names such as Anton Rubinstein, Ignacy Paderewski, Vladimir de Pachmann, Leopold Godowsky, Busoni, Rachmaninoff, Cortot, Schnabel, Arthur Rubinstein, Vladimir Horowitz and Sergei Prokofiev. At almost every world piano competition new names pop up, some of which sink into oblivion – or already have – in the mad scramble for places in the limelight … names such as the little-known gifted young Greek pianist Loris Margaritis.

"Schimmel – Where the integrity of modern design and classical craftmanship cross paths."
– Lenny Kravitz

Margaritis had the good fortune of being heard as a nine-year-old in Munich in 1903 by Thomas Mann, who used him as the real-life model for the character Bibi Saccellaphylicas in his novelette *Das Wunderkind* ("The Child Prodigy"), written as a feature for the Vienna newspaper *Neue Wiener Presse*. The young Margaritis was immortalized in a literary work which in a delight to read and, with the art of its flowery language, became a eulogy to piano playing in general. A sample: "It is this tingling feeling of happiness, this silent shiver of pleasure, which runs up and down his [the child prodigy's] spine every time he sits down at an open piano – he will never lose it.

Again the keyboard presents itself to him, these seven black-and-white octaves, among which he so often loses himself in adventure and destinies that deeply stir the emotions … It is music, in all its height, width and depth, which lies before him. It lies spread out before him like an enticing sea, and he can dive in and float blissfully, let himself be borne by the waves and suddenly sink in a storm, yet without ever losing the complete control which he holds in his hands… ."

Unfortunately, such a eulogy has scarcely been sung to the prosaic work of the many anonymous and deserving piano builders. These are the unsung heroes of the past three hundred years that have successfully plied their trade with the necessary tools, with their artistry and craftsmanship. They have made an indispensable contribution to countless millions, famous and not-so-famous, and the world and joy of music on 88 keys.

Jazzkantine

Udo Jürgens (left)

Ray Charles (above)

Konstantin Becker (left)

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SCHIMMEL
PIANOS

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