

History and technological development of the piano



Introduction

The piano is a musical instrument played with a keyboard. It is among one of the most common and popular instruments in the world because it has been widely used in society. Just like R. Larry Todd stated that, “ The piano is the most familiar of modern instruments, which acquired its prominence during the nineteenth century, when it became essentially the instrument of choice” on page vii in book Nineteen-Century Piano Music. For example, piano is widely used in solo performances, ensemble use and accompaniment of classical and jazz music. It is also very popular as an assistant method of composing and rehearsing. Without it, many classics and modern songs would not be finished and published. The piano has the characteristics of wide range, huge volume and rich timbre change. It can express various musical emotions. It can be fast or slow and loud or soft, the piano’s treble area is clear and loud, the bass area is strong, which can imitate the effect of the whole symphony orchestra. Piano has become the most familiar instrument with its versatility and popularity. However, I do not think most people know about the background and history of the piano.

History of the Piano

The piano has a long and colorful history and it is a stringed musical instrument invented in Italy by a shop of a harpsichord maker named Bartolomeo Cristofori around the year 1700, in which hammers strike the strings (Peterson). It is played on a keyboard, a row of keys, with the player pressing or tapping with the fingers and thumbs of both hands to cause the hammers to strike the strings. The hammers rebound, allowing strings to

continue to vibrate at their resonant frequencies. These vibrations are transmitted to the sounding board through the bridge, thus the acoustic energy can be more effectively coupled to the air. Otherwise, the sound will not be louder than that produced directly by the strings. When the key is released, the damper stops the vibration of the string.

The clavichord allows the expressive control of sustain and volume, it cannot perform in a similar capacity as the piano especially in big halls. The harpsichord on the other hand does not have the ability to provide a variety of dynamic levels from the same keyboard during play. The piano was the solution to the shortcomings as it combined the ability to play loudly with sharp accents. It has the ability to project during performances with larger venues with varying dynamics ranging from loud to soft. It was Cristofori's idea to solve this mechanical problem by designing a stringed keyboard instrument where notes would be struck by a hammer. Upon striking the string, the hammer must not remain in contact with the string. If the hammer remained in contact with the string, it would damp the sound and reduce the vibrations on the string. The hammer must also return to its resting position without softly bouncing with force so that it is ready to play almost immediately. This mechanical model was adopted in the later centuries. Cristofori's instruments were made with thin strings and were quieter than the modern piano.

The model by Cristofori remained unknown for many years until an Italian writer published it in an article in 1711. The writer, Scipione Maffei, included the diagrams of the mechanism as developed by Cristofori (Powers). The generation that followed began to work based on the details provided in the <https://assignbuster.com/history-and-technological-development-of-the-piano/>

article. A German builder, Gottfried Silbermann made a modification in his model by adding the sustain pedal that lifted the dampers from the strings simultaneously. With the new development, notable musicians such as Johann Sebastian Bach accepted and recommended a model that appeared in 1747 (Isacoff). He actually became an agent in the selling of the piano for many years. Piano making flourished and the instrument we see and enjoy its sound today was designed and modified with much emphasis being on its ability to play soft and loud.

During the classical music era, the piano underwent changes that were necessitated by the need for a more powerful and sustained piano sound. The changes were made possible by the industrial revolution where machine production had become possible. High quality wires were used to make the string part of the piano. Iron frames were made from precision casting and could withstand incredible tension of the strings. The tonal range of the piano was also expanded to seven octaves and more. Further modification was done on the number of strings in the lower notes. A 'choir' of three strings was used on these lower notes to improve the richness of the sound. There variations in the final model of the piano. These variations include the upright piano, the grand piano, and the electronic piano.

Besides the classification, one feature that was introduced to the piano and applies in all the piano categories is the use of pedals. The bottom of every piano has at least two pedals while other have three pedals. These are levers that the pianist presses using his feet to change the sound of the strings.

Each pedal changes the sound in its own way. For example, the damper pedal, also known as the sustain pedal, is the one to the right and is the <https://assignbuster.com/history-and-technological-development-of-the-piano/>

most common and often used. In musical scores, it is referred to as 'the pedal'. Once pressed by the pianist's right foot, the dampers that rest on the strings come off the strings and make them vibrate more because they are free. This means that the notes sound longer as long as the pedal is pressed down. This pedal requires skill so that it does not create dissonance in the music. Other determinants of the use of this pedal include the size of the piano, the nature of the room's acoustics and the style of music being played. The soft pedal, also known as the *una corda pedal*, is the one to the left and should be pressed down by the pianist's left foot. It makes the notes sound softer or quieter. It does this by shifting the hammers to the left so that they only hit two strings instead of three. It is common in classical music and should be pressed down throughout the piece. There are those pianos with three pedals. The function of the middle pedal varies for each type of piano. On the grand piano, it is the *sostenuto* pedal and is pressed by the left foot. It keeps the sound going just like the damper pedal but only on the notes that are being played when the pedal is down. In some upright pianos, the middle pedal is used as a practice pedal where it places a cloth in front of the strings and makes the sound very quiet.

The Grand Piano

The grand piano is a variation of the piano whose strings are horizontal and extend away from the keyboard. The mechanical action happens below the strings and the hammers use gravity to return to their resting positions.

There are various sizes of the grand piano, but the common one is the concert grand piano, which is about three meters. With all other parts

remaining constant, longer pianos have longer strings leading to larger and
<https://assignbuster.com/history-and-technological-development-of-the-piano/>

richer sound. The string stiffness of the piano ensures there is lower enharmonicity, which creates harshness of tone. Grand pianos have a lid that swings open for better sound production and resonance. Initially, the term grand did not apply to horizontal pianos; it applied to the length of the strings. There are three major categories of the grand piano: concert grand, parlor grand, and baby grand.

The concert grand piano is the largest of the entire grand piano family. Most concert stages have this type and most professional venues for music performance always have the grand piano. Concert grand pianos have the most resonant sound that covers the entire concert hall. The extra length and stiffness of the strings gives the concert grand piano its superior sound. The parlor grand piano is the middle ground of the grand piano family. It is suitable for large rooms and moderate rehearsal venues such as recital halls. There are no modification or omissions in the parlor grand piano as it is just a slightly smaller version of the concert grand piano. The strings are shorter and the resonance is lesser. It is also important to note that it is easier to play the parlor grand piano than the concert grand piano because of its size. It has easier playability with unique touch, tone, and dynamic range. For an average household, the concert and parlor grand pianos may seem too large. Thus, there was the demand for smaller 'baby grand' pianos in the United States as each household had the practice of learning how to play the piano. Hugo Sohmer came up with the baby grand piano in 1884 (Skal). It has been adopted as one of the most important pianos for early learning at home.

The Upright Piano

These are referred to as vertical pianos that are compact because their frame and strings are vertical. The strings are perpendicular to the keyboard. In comparing the grand piano and the upright piano, the major difference is the length and the direction of strings. The other mechanisms as designed and the materials remain the same. The upright piano is popularly used in churches, schools, community centers, and music conservatoires. They are common in homes and popular in rehearsals. The hammers move horizontally and return to their resting positions using springs. There are upright grand pianos, which have longer frames and extended strings. The upright piano has all the three pedals as invented and used in the grand piano. The middle pedal is often used as the rehearsal pedal as it helps make the sound quieter by dampening the strings further. The upright piano can also be categorized under three different categories. There are studio pianos, console pianos, and the top of a spinet model. However, anything that is taller than forty-two inches is an upright piano.

In effect, the upright piano is a grand piano whose strings run vertically and the action is adapted accordingly. Early grand pianos had the strings springing from the keyboard. In some cases, the strings are obliquely arranged. In some cases, the upright piano has been referred to as the giraffe piano.

The Electronic, Electronic, Digital Piano

The earliest electric pianos began to show up in the late 1920s with metal strings magnetically transmit the vibrations to an amplified that would deliver the sound to a loudspeaker. The earliest electric pianos used the

<https://assignbuster.com/history-and-technological-development-of-the-piano/>

magnetic pick up that is similar to the one built in an electric guitar. Classical music rarely uses electric pianos. In an electrical piano, the analogue signal is amplified and electronically manipulated with effects and relayed to speakers. An example of the electric piano is the Fender Rhodes, which was invented by Harold Rhodes and became popular in the 1970s. Its mode of sound production is similar to the grand and upright pianos. It uses keys and hammers but instead of strings, it uses thin metals that are electromagnetically amplified and relayed into a speaker within the keyboard amplifier (Vail).

The Rhodes piano had features that were similar to the ordinary acoustic pianos but there were instances where it had less keys compared to the grand and upright pianos. The mode of sound production is similar to how a tuning fork works. Even with the absence of electricity, the piano would still produce sound but at a weaker frequency (Baerman). The early model built by Rhodes had tremolo feature and amplified built inside. The most common appearance was the keyboard and separate amplified system. However, in the 1970s, there were improvements that were done to the Fender Rhodes piano mechanics. For easier maintenance, the felt hammers were replaced with neoprene rubber. The supporting material for the metals was wood, which was replaced with aluminum. The modifications may have made the production of the electric piano cheaper, but it tampered with the resonance. By the early 1980s, the piano had a power amplifier that also served as a synthesizer instrument (Vail). The development continued and today there are digital MIDI-equipped pianos that can perform a number of functions and

are convenient for musicians. Models such as the Yamaha Clavinova with full pedal sets have been created to step in the position of the upright piano.

Development

The history and the evolution of the piano has been highlighted and discussed. The piano plays a vital role in western classical music, jazz, rock, blues and folk music. The piano has been mentioned as the standard instrument on which notable musicians and composers grew up playing. This is because the instrument offers an opportunity to experiment various harmonic and melodic interplay in order to create music. From the simple Cristofori model to the later models that have been highlighted, the piano has undergone through diverse modifications. What has remained constant is the tuning system and the standard keyboard structure. The modern digital pianos are evolving at a faster rate because technology is advancing at an equally fast rate.

The popularity of the piano since its invention has been growing. The most notable popularity began in Germany and spread out to Italy, as composers needed the piano in order to create the music we enjoy playing today. For example, Mozart, Bach and other composers relied on the piano greatly. Today, the piano is the basic instrument that each music student is introduced to because most of the theoretical concepts of music can be explained using the keyboard. The acoustic pianos are popular in teaching because they do not rely on any input such as electricity in order to function. The techniques of sound production have also been highlighted. However, the piano can only be played using sheet music, by ear, or through

improvisation. Piano playing is a popular practice in music schools and other informal settings.

Conclusion

The piano is the basic instrument that any musician or musical enthusiast must familiarize with. It uses the keyboard on which musical concepts are applied. Its history dates back to 1700 when Bartolomeo Cristofori decided to make improvements to the clavichord and the harpsichord. He wanted to have an instrument that used hammers to strike strings and produce sound. The piano was the alternative to the missing sound dynamics that the harpsichord and clavichord were not able to achieve. Improvements were made and eventually three major categories were hatched: the grand piano, the upright piano and the electric/electronic piano. To date, the piano remains the basic musical instrument where music is made.

References

- Baerman, Noah. *The Big Book of Jazz Piano Improvisation: Tools and Inspiration for Creative Soloing* . Alfred Music Publishing, 2003. Web.
- Isacoff, Stuart. *A Natural History of the Piano: The Instrument, the Music, the Musicians – From Mozart to Modern Jazz and Everything in Between* . Knopf Doubleday Publishing, 2012. Web.
- Peterson, David R. “ Acoustics of the hammered dulcimer, its history, and recent developments.” *Journal of the Acoustical Society of America* (1994): 3002. Web.

- Powers, Wendy. *The Piano: The Pianofortes of Bartolomeo Cristofori (1655-1731)* . October 2008. https://www.metmuseum.org/toah/hd/cris/hd_cris.htm. 5 December 2018.
- Skal, Georg von. *History of German immigration in the United States and successful German-Americans and their descendants* . New York: Smiley, 1908. Web.
- Vail, Mark. *Vintage Synthesizers : Pioneering Designers, Groundbreaking Instruments, Collecting Tips, Mutants of Technology* . Backbeat Books, 2000. Web.