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# Classical Accordion - The evolutionary path of a minor instrument

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***Abstract:*** *The current state of the converter accordion is the result of a path marked by reflection, commitment, ingenuity and creativity. Factories, interpreters, musicologists have played a key role in this evolution. Although its appearance is associated with the year 1829 by Cyrill Demian (Austria), according to various literature on the subject, the origin of the accordion is often associated with the predecessor instruments of the organ, given the reed system used by both. At the same time, other ancient instruments that used free reeds or that made use of bellows as a sound activating agent, also inspired the successive improvements introduced in the accordion as we know it today.*

Key-words: *Accordion, History, Free Bass, Performance*

## 1. Introduction

*Do you know that my very first experience as a composer was*
*a "Concerto for Accordion?"*
Alfred Schnittke

Sachs (1940) refers to the Sheng (figure 1), also known as the mouth organ, as being one of the first instruments to have used the free reed system (the passage of air makes the reed vibrate and this vibration produces the sound and determines the height of the note) and places its origin 3000 years before Christ. According to Tracy (1999), its invention is attributed to the Chinese empress Nyn-Kwa. Sachs (1940) describes the Sheng composed of a variable number of bamboo tubes (13 to 24) with different lengths, placed next to each other, which penetrate a wooden lid that covers a rounded reservoir (generally a half gourd). Air is blown into the

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reservoir through a side nozzle. Instead of blowing, you can suck in air. Its shape was intended to imitate the Phoenix bird, which after death by fire would be reborn from its own ashes.

Fig. 1**.** *Sheng*

Fig. 2. *Sheng player*

The sound of the Sheng was produced by the passage of air through bamboo tubes, with holes, which were covered or opened by the instrumentalist's fingers, according to the notes that were intended to be played (figure 2). Inside each tube, next to the base, there is a free metallic reed. When the performer covers a certain hole, the reed vibrates. The number of notes on this instrument is variable, although the most common is 13 notes.

Some sources, such as poems, reproductions in stained glass in cathedrals, carpets, scarves, paintings, and illuminations, reveal that in the Middle Ages there was also a portable organ (fig. 3), which could be carried with a band around the neck. With a range between two and three octaves, it was equipped with tubes that sounded through the action of the right-hand keyboard and the bellows handled by the left hand. Used in processions, it was quite common between the 12th and 16th centuries (Encyclopædia Britannica, 2008).

Fig. 1. *Portable organ (detail of larger image)*

After the Renaissance, the Regal appears: a small portable organ with a single keyboard, invented in Nuremberg by Georg Voll (1530-1551), in the second half of the 15th century. XVI. It could be smaller, the Bible Regal (fig. 4), or larger, the Organ Regal (figure 5). It was equipped with two bellows and stop vanes. These reeds do not produce sound; they just vibrate against an air intake slot, thus activating the sound. It required one person to operate the bellows and another to play the instrument. Regal's heyday lasted approximately until the first half of the 20th century. XVIII (Regal, 2014).

Fig. 4**.** *Bible Regal*

Fig. 5**.** *Organ Regal*

Sadie (1984) mentions that the Jesuit priest Joseph-Marie Amiot (1718-1793) took the Sheng from China to St. Petersburg in 1777. In Russia, Christian Gottlieb Kratzenstein (1723-1795), eminent physicist, physician, and professor of medicine, examining the instrument, found that its sound agent was a metal blade that

vibrated by the action of the air producing low and high sounds and invented an instrument that produced five vowel sounds by the principle of the free reed. Inspired by this discovery, Franz Kirsnik (1741-1802) in 1780 applied the system of metal-free blades to the pipes of the organs he manufactured.

The introduction of the Sheng in Europe gave rise to several experiences in the field of construction of free reed musical instruments. In 1818, Anton Haeckel presented Physharmonika in Vienna (figure 6), whose patent he would obtain on April 8, 1821 (Anton Haeckl, 2014). The French model pictured below, attributed to Alexandre Debain, has a bellows on the back and 5 “registers” that allow you to play different degrees of sound volume.

Fig. 6. *Physharmonika*

According to Missin (2014), still in 1821, a prototype of the harmonica or harmonica was built by Christian Friedrich Ludwig Buschmann (1805-1864), a German manufacturer of musical instruments. This small musical instrument, initially built as an aid for tuning pianos and organs, was called Aura (figure 7).

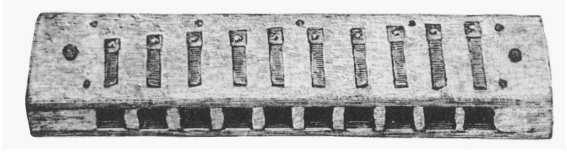

Fig. 7**.** *Aura*

A year later, Buschmann made some improvements to the Aura - the introduction of a mechanical bellows and a push-button keyboard - and the new instrument, called the Handaeoline (figure 8), was patented in Berlin in 1822 (Sadie, 1984; Hermosa, 2013). Many researchers in the field even consider the Handäoline as the first accordion in the history of music and not the model created a few years later by Cyrill Demian.


Fig. 8. *Handäoline*

According to Wayne (2009), on June 19, 1829, in London, Charles Wheatstone (1802-1875) presented the Symphonium (fig. 9), a small free reed mouth organ inspired by, among other instruments known at the time, at the Sheng. Composed of a keyboard with buttons on the right hand and on the left hand, the sound of the Symphonium was activated through air blown into the oval hole on the front of the instrument, which made the set of reeds vibrate. It made it possible to play all the notes of the chromatic scale and, either when entering or sucking air, it produced the same note (unisonoric). The patent was granted on December 19, 1829.


Fig. 9**.** *Symphonium*

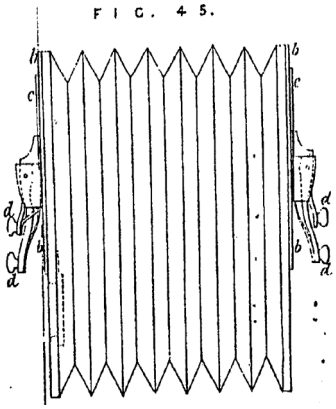


Fig. 10*. Figure nº 45 of the Symphonium patent annex*

In the annex to the patent (specifications – descriptive drawings) of the Symphonium, Wheatstone already presented, in figures nº 43 and 45, sketches of the bellows that he would apply to the Symphonium mechanism (fig. 10). This new instrument, whose form was already patented in 1829 and which began to be produced in 1830, would be called concertina, although its name was only adopted in a new patent by Wheatstone obtained on August 7, 1844 (Wayne, 2009). Eydmann (1995) suggests that the application of the bellows resulted from Wheatstone's recognition that the Symphonium demanded a great respiratory capacity from the performer.

The concertina (fig. 11) initially had 12 buttons in the right hand and 12 buttons in the left hand, located in the centre of each keyboard and the reeds were made of copper (brass). Its main innovation was a mechanism of buttons in parallel rows and a new fingering scheme (positioning of notes) that enabled a compact and easy-to-play instrument. The typical shape adopted for the concertina would be hexagonal and the English concertina was fully chromatic and unisonoric (Wayne, 2009).

According to Monichon (1971), the characteristics of the concertina influenced, more than Cyrill Demian's instrument, the modern concert accordion.

Fig. 11**.** *English concertina*

## 2. The first patent and subsequent ones

Monichon (1971) refers that, on May 6, 1829, Cyrill Demian (1772-1847) and his sons Karl and Guido presented in Vienna an instrument under the name of Accordion (fig. 12), due to the fact that its five buttons on the small right-hand keyboard, when pressed, produce chords. The patent was officially granted on May 23 (figure 13). Demian's construction consisted of a free reed instrument that allowed different sounds to be obtained by opening and closing the bellows.

Fig. 12. *Accordion, 1829* (right hand 5 buttons)

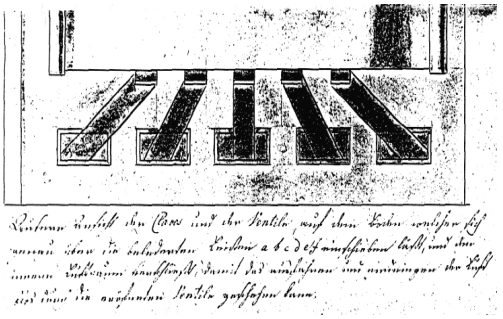

Fig. 13**.** *Excerpt from Cyrill Demian's patent, 1829*

The reduced size, light weight, portability, ease of use (pre-defined chords) and possibilities for musical accompaniment quickly made this toy instrument a success in Europe. In the following years, many inventors produced changes and mechanical improvements to the accordion and prepared the respective user manuals. In 1831, the first method for teaching the accordion was published in Paris by Pichenot (Monichon, 1971).

From 1830 onwards, the accordion began to be produced on a larger scale and buttons were added to the right-hand keyboard and buttons added to the left hand. Charles Buffet, in Belgium, Napoleon Fourneaux and Constant Busson, in France, are the most important builders (Sadie, 1984).

According to Monichon (1971), around 1834, A. Foulon completed a model with eight large buttons and eight small buttons (two chromatic scales), leading to the attainment of midtones. In 1835, Mathieu-François Isoard and Jean Philibert-Gabriel Pichenot patented an accordion in which, instead of chords, each button on the keyboard of the right hand produced two different notes (in the opening and closing of the bellows), allowing to play melodies in diatonic scales. These diatonic and bisonoric accordions in predetermined keys and intended to imitate the sound of the flute were also known as flutinas (figure 14).

Fig. 14. *Bisonoric diatonic accordion (flutina), ca. 1835 (right hand and left hand)*

In 1837, Adolf Reisner proposed a new layout for the keyboard, which allowed the valves to be located next to the keyboard, on two parallel rows of buttons. In 1840, based on these improvements, Leon Douce built an accordion with twelve large buttons and as many small ones on the right-hand keyboard that produced tones and midtones, as well as, for the first time, an 8-button keyboard for the left hand (although this model was not very commercially successful). By pressing a button, this instrument produced the same sound when opening and closing the bellows (unisonoric), being a precursor of the future chromatic system (Monichon, 1971).

According to Aguilar (2001), in 1846, the organ maker Alexandre patented the first accordion with registers. The different sound timbres were determined by the size and shape of the sound chamber (a small rectangular air box that surrounded each reed).

In 1847, accordion production in Paris flourished and the Chamber of Commerce registered 62 manufacturers in that year. In 1850, the use of accordions with 10 to 14 buttons with incorporated halftones became more and more widespread and the possibility of playing harmony passed from the right hand to the left hand, serving only as a base (Monichon, 1971).

Meanwhile, in Chemnitz (Germany), Karl Friedrich Uhlig (1789-1874) built in 1834 the first German diatonic concertina (fig. 15), which adopted the square shape and was bisonoric. It had greater range, resonance, and sonority than Wheatstone's English concertina, as it had a greater number of buttons and more than one steel reed for each note. The German concertina later led to the creation of the bandoneon, invented by Heinrich Band (1821-1860) in 1840 (Chemnitzer concertina, 2014).

Fig. 15. *German concertina, ca. 1850* (right hand 16 buttons, left hand 14 buttons)

According to Sadie (2001), the first chromatic accordion with a keyboard with buttons in the right hand was built in 1850 by the Viennese musician Franz Walther (fig. 16). The right-hand keyboard had 46 buttons (later expanded to 52) arranged in three parallel rows at minor 3rd intervals, each row halftones apart. The left-hand keyboard had 8 diatonic buttons (later expanded to 12) divided between single notes and two-note chords.


Fig. 16**.** *Chromatic button accordion, ca. 1870*
(right hand 46 buttons, left hand 12 buttons)

According to Hermosa (2013), on July 6, 1853, the first unisonoric accordion with a piano keyboard was patented by Auguste Alexandre Titeux and Auguste Théophile Rousseau (fig. 17). This instrument mixed the piano keyboard (three

octave range) with Wheatstone's concertina system. In an extension to the patent granted on November 11, 1853, Constant Busson was added as an inventor.


Fig. 17**.** *Accordion-Organ, ca. 1860* (right hand with three-octave piano keyboard)

According to Monichon (1971), in 1860 the instrument undergoes important changes in its internal mechanism: the kind of box where the reeds are inserted becomes dismountable; the resonance boxes gain volume and sound quality; and the bellows is increased.

In 1867, the builder Alexandre Neveux presents an accordion with a transposing keyboard in the right hand, with 13 large buttons and 16 small ones, which can be moved along marks that indicate the available tonalities. On the left-hand keyboard, the buttons let you play interchangeable chords, which allowed you to further develop the harmonic possibilities. However, this model did not have great commercial success (Monichon, 1971).

## 3. Series production and the evolution of keyboards to the convertor system

In central Europe, the first factories to emerge were Hohner in Germany (Trossingen, 1857) and, in Italy, Soprani (Castelfidardo, atelier in 1864, larger scale production in 1872) and Dallapé (Stradella, 1876). However, in Russia, series production of accordions began in Tula circa 1830. In 1870, Nikolai Beloborodov

(1828-1912) developed the chromatic accordion with three parallel rows of buttons on the right-hand keyboard, later called the bayan (Sadie, 2001).

At the end of the century, in the 19th century, Italian manufacturers in Castelfidardo (most likely the Soprani house) invented a system that consisted of placing two identical reeds on the same support (figure 18), giving the same sound when opening and closing the bellows (unisonoric). This system allowed the keyboard of the right hand to play a leading role and, at the same time, the opportunity for the keyboard of the left hand to develop. These new instruments would be called chromatic accordions (Monichon, 1971).

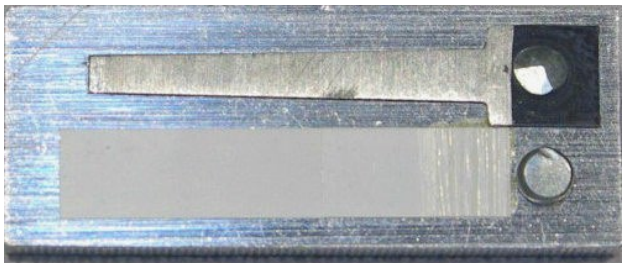

Fig. 18. *Support with two metallic reeds, on the front and back* (unisonoric)

According to Sadie (1984), the evolution of the instrument towards a uniform sound (it was neither diatonic nor had a predetermined tonality) and the widespread use of steel reeds in commercial production by the factories that were emerging increased the popularity of the accordion. This new chromatic model, more robust and with better sound, became the standard reference for manufacturers.

From here, countless experiments were created until the beginning of the next century. The right-hand button keyboard was being perfected in order to achieve a more rational arrangement of notes, often inspired by the evolution of the piano keyboard (Monichon, 1971).

Around 1900, the 3-row model appeared on the right-hand keyboard with a fingering known as the Italian system. In 1911, the Italian concert performer Giovanni Gagliardi proposed the introduction of two more auxiliary rows (which repeat the notes of the first and second row), offering the advantage of being able to instantly transpose to any tonality without having to change the initial fingering (figure 19). This system proposed at that time is the same as that used today (Monichon, 1971).

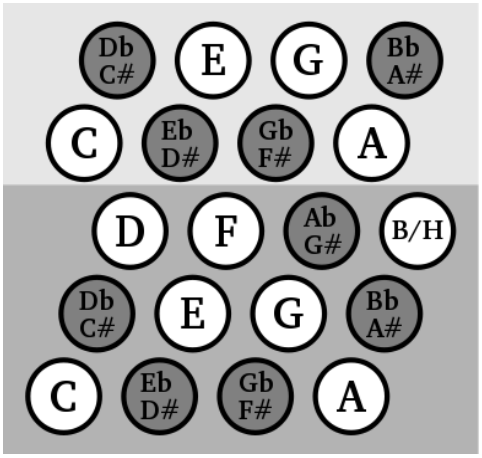


Fig. 19*. Right hand button keyboard with 3 rows + 2 auxiliary rows* (excerpt)

However, the evolution of the left-hand keyboard represented a new path in the development of the instrument. Around 1850, it was common for the instrument to have two buttons that allowed to hear bass sounds and another two buttons with the fundamental chords (tonic/dominant). In 1867, A. Neveux added to the four buttons a transposing system in which the buttons were fixed on removable plates according to the tonalities of the music to be played, which forced to change the arrangement of the plates. In 1885, models appeared in Europe that had up to 6 chord buttons, using tones close to the initial one (Monichon, 1971).

According to Hermosa (2013), throughout the 19th century, the left-hand keyboard continued to gain complexity. The arrangement of basses and chords was not standardized until the keyboard with standard basses appeared in 1885, invented by Mattia Beraldi (although there is no unanimity about the date and the inventor). This invention led to the progressive increase in the number of buttons on the left-hand keyboard and the realization of more complex harmonic accompaniments.

According to Doktorski (2004), the model built by Mariano Dallapè in 1890, in Stradella (Italy), had 112 buttons on the left-hand keyboard. The inclusion of accidental notes, with sharps and flats, allowed the progressive passage to 120 buttons on the left-hand keyboard, making it possible to hear free/chromatic basses and standard basses with perfect major, minor and dominant seventh chords (Monichon, 1971).

On March 5, 1897, Paolo Soprani (1844-1918) obtained a patent for an accordion that synthesized inventions to date: it featured 3 rows of chromatic

buttons on the right-hand keyboard, the left-hand keyboard produced perfect chords. major, perfect minor and dominant seventh from the 12 chromatic tones, and it was unisonoric on both keyboards (figure 20). Designated as Harmonica, it quickly became known as chromatic accordion (Monichon, 1985).

Sadie (1980) mentions that, in 1910, a system appeared in Europe that added three rows to the left keyboard of the accordion that produced single notes, that is, each button produced a unique sound, allowing the realization of musical excerpts for several voices. One of the disadvantages of this system was the space available on the keyboard to contain more of these buttons (the total number of rows was nine). Another disadvantage was the uncomfortable displacement of the instrumentalist's left arm to reach the rows of auxiliary buttons.

In the period that followed, an incalculable number of systems would appear and the “bassi sciolti” system in the left hand would be preserved (free/chromatic basses, also known as bassetti basses and as such noted in the scores with the symbol B.B.). This system would now give the left hand the same possibilities as the right hand.

It is within this period that the accordion reaches its current form, already having several timbre and sound registers, 106 buttons on the right keyboard, and 120 buttons on the left keyboard, chin registers and resonance boxes (figure 21). in 1912, Monichon (1984) mentions that the Hohner house will produce its first chromatic basses and the Stradella cooperative an instrument of 120 basses with three rows of chromatic notes.


Fig. 20. *Chromatic Accordion by Paolo Soprani*

Fig. 21**.** *1920s Chromatic Accordion* (106 buttons right hand, 120 buttons left hand)

According to Hermosa (2013), driven by the willingness of performers to take advantage of a keyboard in the left hand with free/chromatic basses and standard basses, various hybrid attempts, and pioneering models begin to emerge across Europe. In 1959, Vittorio Mancini invented in Castelfidardo (Italy) a new system called converter that allowed converting the existing buttons, alternating between pre-defined chords (standard basses) and chromatic notes (free/chromatic basses). This system would only arrive in Portugal in the mid-1970s and, as a result of this transformation, the musical thinking for those who play the accordion would be completely different.

## 4. Conclusions

The Accordion, as an instrument capable of fitting into different musical genres and styles, has been gaining notoriety in concert halls on a global scale. The design combined with the sound and refinement of the materials used in the modern accordion makes it an instrument with unique characteristics that is increasingly asserting itself on the international scene (Figure 22).

Fig. 22**.** *Current chromatic accordion with converter system*

In turn, the close collaboration between eminent accordion educators/interpreters and internationally renowned composers (Berio, Denisov, Gubaidulina, Kagel, Donatoni, Hosokawa, Lindberg, Bochmann and others), the integration of the accordion in the official courses taught in Music, Higher Conservatories and Universities, the inclusion of the accordion in small chamber music formations and with orchestra, the technical and mechanical development, the result of a close collaboration with the factories, has brought the instrument closer to a more erudite musical environment and one that claims the accordion with one of the outstanding instruments of the 21th century.

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