

THE LOUIS XVI – HARP

(Beat Wolf © 2009)

Background

The pedal harp in the **style of Louis XVI** has been made in Paris from about 1760 to around 1800. Ch. S. Favart reported already in 1761 that the new harp was very fashionable and the ladies in Paris were almost mad to play it. As it was the favorite instrument of **Marie-Antoinette**, interest in the harp increased in the Parisian Nobility. Numerous Louis XVI-harps are still preserved in museums and private collections; some are back in good playing condition after a careful restoration was made, so their magical charm can breathe on.

Jakob **Hochbrucker** (1673-1763) from Donauwörth is generally regarded as the inventor of the pedal harp, but it is however clear, that he ultimately perfected the pedal mechanism. As early as 1720, he built an instrument that in principle foreshadowed the French Louis XVI - harp. This pedal harp is displayed in the Kunsthistorisches Museum in Vienna; it includes all the important features of the later French harp: sound box composed from 7 ribs; spruce soundboard with horizontal grain; single action pedal mechanism with 7 pedals; head shape suggesting a volute (scroll).

The German **G. A. Goepfert** might have played a harp of that kind when he celebrated great success in the „concert spirituel“ in Paris in 1749. Unfortunately no clear evidence has emerged to tell us more about the nature of his pedal harp and its mechanism. So we do not know whether Hochbrucker made the final step towards the “crotchet” mechanism, or whether it was it Goepfert himself (after Garsault and M^{me} de Genlis), the harp-maker **Salomon** or the innovative watchmaker **Beaumarchais** (a student of Goepfert). Of the latter two, I do not know of any preserved harp. The beautiful and delicate harp of **Saunier** at the Musée de la Musique Paris might be the earliest preserved Parisian harp of that type. It is dated around 1760.

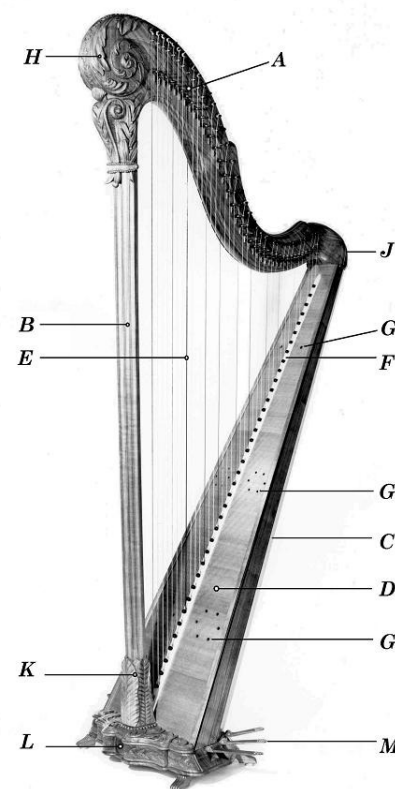
Characteristics / Construction

The typical features of the Louis Seize - style harp can be described as follows: it is as single action harp with seven pedals. Forepillar and neck are marked with profiles and are crowned by an elaborately carved volute (scroll) with acanthus foliage. The sound box made from 7 or 9 thin ribs of maple is covered by a spruce soundboard with horizontal grain. The body shell is closed at the back, if not equipped with shutters (*renforcement*) invented 1785 by **Krumpholtz**. The sound holes are placed as simple 6-hole circles in the sound board which is painted with floral ornaments, with music trophies or fantasy landscape. Less frequently gilding and “*chinoiserie*” can be found. Some rare examples are decorated with realistically carved scenery.

Initially the compass (range) was A1 - g³ with 35 strings, the harp about 150 to 160 cm high. By the time the compass increased to 36 or 37 strings G1 - g³ or a³, the height of the harps around 1780 was about 165 cm.



Painting by J.A.T. Giroust (1753 - 1817)



- A Neck
- B Pillar, forepillar
- AB Frame
- C Sound box
- D Sound board
- E Stringing
- F Bridge rail
- G Sound holes
- H Volute (head, scroll)
- J Shoulder, cutaway
- K Base of Pillar
- L Pedal box (socle)
- M Pedals

By 1790 certain standardization of the Louis XVI - harp can be noted, the compass reaching F1 - b³ with 39 strings, the height 160 to 170 cm. Some harps are found with the "renforcement" shutters (invented 1785 by Krumpholtz) built in the harps back and operated by an eighth pedal. Few preserved harps by **Naderman** are equipped with the "sourdine", a damping rail on the soundboard, also invented by Krumpholtz, whose effect might be compared with the lute stop on the harpsichords. The shutters were in use until well into the 19th century. The orphaned back holes on today's harps even recall them, but the real sense of these holes is hardly ever recognized by today's harpists.

Architecture: All old musical instruments are designed according to basic geometric construction with simple musical proportions and compass points. I have attempted to reconstruct a possible general building plan for this type of harp and have arrived at the diagram shown aside. Many Louis XVI harps fit surprisingly well into this geometry.

For successful **harp makers** in Paris before 1800 I can mention Jean LOUVET, Jean-Henri NADERMAN and his son Henri, HOLTZMAN, RENAULT & CHATELAIN, COUSINEAU père et fils, WOLTERS, further ZIMMERMAN, LEJEUNE, HURBZ, KRUPP and some more; in Strasbourg STORCK and in Nancy CLERMONT. Many of these names indicate immigrated German craftsmen.

Not least because of the French Revolution before 1800, the Louis XVI style was replaced by the **Empire** style, imitating ancient ("Greek") ornamentation. The compass and size of the harps were enlarged. After 1800 the measure of stringing signaled a clear change toward a softer sound by shortening the descant strings, with more attention to the bass area, side by side with pitch-raising in Paris (a' about 430 Hz).

Sound quality

The lightly built body shell with thin staves ensures optimal sound performance and gives a surprisingly strong carrying tone, even with very light strings. In terms of sound I put the Louis XVI harp in the transition from the Baroque ideal to early Classic. It still has the long **measure** of the Baroque period and therefore the bright, brilliant and transparent treble, but has a more powerful bass, strengthened by the use of copper-wound bass strings. By **measure** I mean "stringing proportion" (as defined in the case of keyboard instruments) above all the string *length* which determines the curvature of the harp's neck and, together with the choice of string *gauge* or thickness, greatly influences the tone quality and sound colours throughout the entire range. It is evident, that early neck curves are forming some kind of a stretched **S**, while later ones – and especially such after 1800 – describe a marked **S** curve because of the shorter treble. The diagram aside shows three neck curves.

Red: Wolter-harp c.1780; blue: Wolter, c.1810; yellow: modern double-action harp, Erard, 1905.

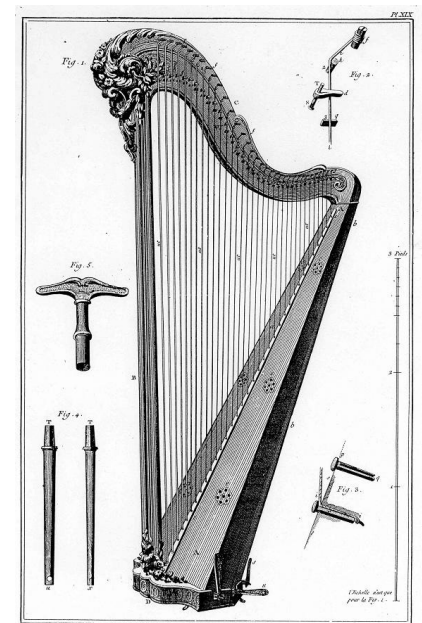
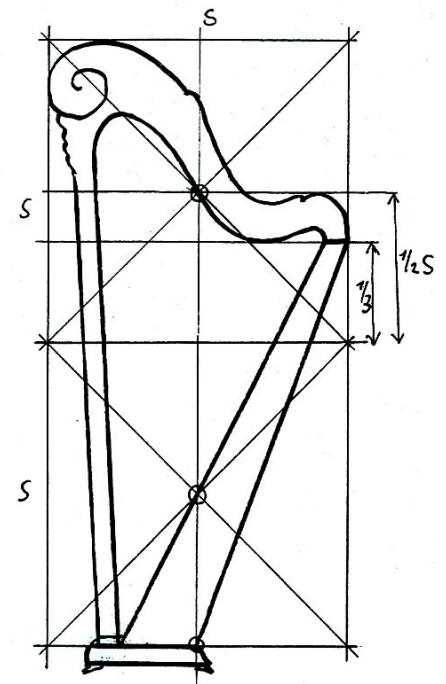
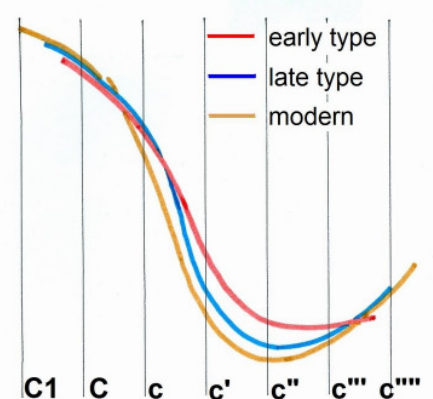


Abb. 3 *Lutherie, Harpe Organique.*
Diderot, Paris, c. 1763. (Encyclopédie)



Mechanism types

The single action pedal harp has a diatonic tuning. Each string can be raised for a semitone by engaging a pedal, situated in the base of the harp. This pedal affects all strings of the same name. Based on a standard tuning of E-flat-major, seven pedals are able to produce the most important keys from three flats up to four sharps.

The single action mechanism was mainly executed as crotchet system (pulling crotchets) and is hidden inside the hollowed neck on the right hand side, closed by a lid. On the left hand side, the crotchet pulls the string against the neck onto the semitone-nut. This type of mechanism supported the pedal harp well over 60 years, almost unchanged.

The really perfect harp of Hochbrucker from 1720 acted upon the strings by turning crutches. A pedal harp in the Germanic National Museum in Nuremberg (built in 1755 *for* or *after* Seb. Lang) shows an early type of pulling crotchet; whether Goepfert was its builder is not known.

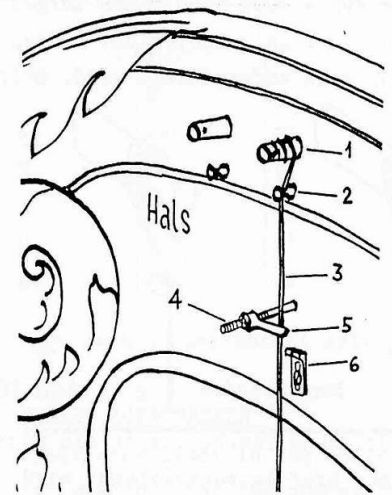
Further developments

Cousineau used the crotchet-mechanism, and from about 1780 as well the "*béquilles*" mechanism after his own invention. He made many other inventions too. In 1782 he doubled the number of pedals from 7 to 14, to reach all keys playable. Unfortunately the harpists of the time did not give much attention to this forward-looking invention of the double action harp. Later – back to the single action harp – he invented a system producing the semitones by turning tuning pegs (*chevilles tournantes*). Some of these harps in the Empire style are preserved. Unfortunately, the strings tired very quickly by the frequent change of tension.

Sebastian **Erard** revolutionized the harp with the invention of his forked disc mechanism (patented 1794) and his new construction of the body (round shell), which changed the former bright baroque sustain to a softer, dark and romantic sound, and also allowed (and required) a higher tension of the strings.

From an **acoustic** perspective, the crotchet mechanism is the most perfect solution, because the shortened string vibrates from the nut which is firmly anchored to the neck; thereby the tone colour stays almost unchanged. With the "*béquille*" mechanism the "squeezing" of the string happens a little outside the neck's surface, thus a significant loss of energy is noticeable on the shortened vibrating string. The same also applies to Erard's disc mechanism. The fact that Erard describes the crotchet mechanism as outdated and full of errors in his advertising brochure turns out to be a gimmicky lampoon (P. Erard, "*The harp in its present improved state ...*" London 1821). These false remarks keep persisting still today.

On the other hand it is true that - with the disc system - Erard paved the way for the triumph of the double action harp. Charles **Groll** patented a double action harp already in 1807. Obviously Erard had to buy Groll's patent. Although Erard has not actually invented the double action harp, he finally won the race commercially.



- 1 Tuning peg
- 2 Bridge pin
- 3 String
- 4 Thread stick
- 5 Shoe
- 4 + 5 = Crotchet
- 6 Semitone nut, slider



Saunier, Paris, c. 1760. (Musée Mus. Paris)



Naderman, Paris, 1792.

Tuning, temperament

In Paris the usual **tuning pitch** before 1800 was around 405 - 415 Hz. Several instruments around 1770 show very long measure (string lengths), for which even a lower pitch is recommended, so that the treble strings do not break („*ancien ton de l'opéra*“ around 392 Hz).

For practical reasons the music scene committed itself to a pitch at $a^1 = 415$ Hz for the music of the 18th century; this is a half-tone lower than the today's "official" pitch. Unfortunately even this 415-norm today is frequently raised: 430 Hz seems great "fashion" today. However there is hardly an original harp that could be used at such a high pitch. This fact must put in doubt the authenticity of a performance at 430 Hz: For example W. A. Mozart wrote his flute/harp concerto 1778 for an aristocrat's daughter in Paris; to sound authentic it would have to be performed at 415 Hz or even lower.

It is very interesting to explore the usual **temperaments** on 18th century harps. As I was able learn by measurements on original Louis XVI harps, the semi-tone nuts (*sillets*) were always set **evenly**, i.e. the pedal-increases produce the same amount for all tones. However, different temperaments are shown (independent from any chronology) from harp to harp. Essentially we may notice three main temperaments:

- **6th-comma temperament:** This tuning corresponds about to the one, that the organ maker Gottfried Silbermann used for his organs in the middle of the 18th century. Here, each pure fifth is reduced by 1/6 of the Pythagorean comma. The strings are tuned with fifths of **698 cents** each. All pedal-steps measure 86 cents. This temperament sounds in very clear chords in all keys used on the harp. Between D# and Eb (and G# and Ab) is a difference of 24 cents, so they would not serve as synonyms.
- **8th-comma temperament:** All pedal-increases measure 93 cents. Here, each pure fifth is reduced by 1/8 of the comma. The strings are tuned with fifths of **699 cents** each. This moderate temperament still sounds with weak thirds in all keys used on the harp. Between D# and Eb (G# / Ab) is a difference of now only 12 cents.
- **"Equal" temperament:** All pedal-increases measure 100 cents. The strings are tuned with fifths of **700 cents** each; these fifths are 2 cents smaller than pure fifths. The tones D# and Eb (G# / Ab) are identical. Against my earlier opinion the equal temperament was amazingly often applied to both older (Naderman 1771) as well as later harps of the Louis XVI period.

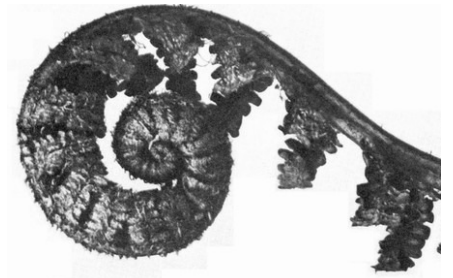
Music A brief selection of "**Méthodes**" of the 18th century:

J. Ph. MEYER, « *Essai sur la vraie manière de jouer de la harpe* » 1763 and « *Nouvelle méthode...* » 1774.

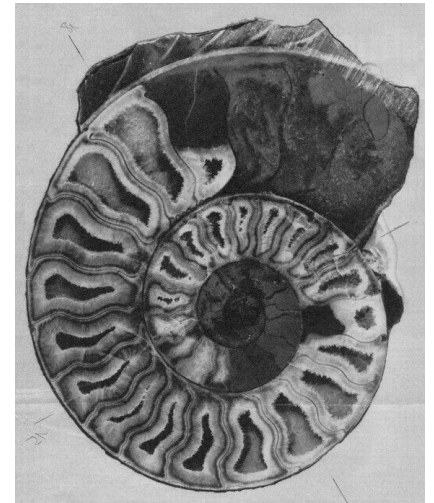
F.-V. CORBELIN, « *Méthode de harpe...* » Paris 1779

J. B. CARDON, « *L'art de jouer...* » 1784.

L.Ch. RAGUE « *principes...* » 1786



Fern, after photo by K.Blossfeldt



Ammonit, age around 100 Mio. years



Holtzman, Paris, c. 1790. (SCB)

J.-B. KRUMPHOLTZ, Paris vor 1790 « *Principes pour la harpe...* »

J.-G. COUSINEAU, « *Méthode* » Paris 1784 and 1803

Comtesse de GENLIS, Paris 1811. « *Nouvelle méthode...* »

A brief selection of harp **compositions**:

Johann Baptist HOCHBRUCKER „*Six Sonates pour la harpe*“
op.1 in 1762 and other 6 S. op.6, 1779.

Coelestin HOCHBRUCKER „*Six Sonates pour la harpe*“ 1771

C.Ph.E. BACH „*Sonate G-Dur für Harfe solo*“ c.1762

P.J. MEYER, div. 1772

Ch.W.GLUCK, Oper «*Orpheus und Eurydike*» Paris première 1774.

A. ROSETTI « *Six Sonates ... harpe ou clavecin...* » c.1784

J. B. KRUMPHOLTZ div. « *Sonates...* » until 1790.

L. SPOHR «*Fantasie op.35*» «*Sonate op.113 Hf & Vl*» 1806 ff

Basso Continuo: Besides the practice that harpsichord music fits quite well on the harp (as described by M^{me} de Genlis), the entire wealth of sonatas for melody instruments is open to be accompanied nicely on the harp. Of course this provides the greatest pleasure when it is not simply played from a written version; in fact only the left hand is *obbligato* in **continuo**, but your right hand has the full freedom of your own imagination, where you may improvise, imitate, support, surround the melody line etc. Less is often more.

My own model

My own recreation of a Louis XVI harp follows the usual requirements in size, compass and construction of around 1790, like those I found by Naderman and other masters. In large parts a harp by **Renault & Chatelain** (dated 1791) served me as a model. With my own measure I have kept the baroque-like sound of the period with bright treble, powerful middle and warm bass. With the well-balanced stringing and the quick response I can reach the typical transparency of the baroque ideal. The compass of 39 strings from F1 to b³ enables one to play the entire French repertoire of the late 18th century.



Beat Wolf, Schaffhausen, 2006.

© 2009, **Beat Wolf, harp maker and harp restorer,**

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Some sources: M^{me} de Genlis 1811; Ludwig Wolf 1985; Droysen-Reber 1999; Adelson/Roudier 2009; Downeyharps 2009.