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Autor: Cleary, Maria Christina
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Early nineteenth-century harp pedalling according to Johann Georg Heinrich Backofen (1768–1839)

Maria Christina Cleary

Johann Georg Heinrich Backofen (1768–1839) was a German harpist, clarinetist, basset-horn player, and composer.¹ His harp method was first published in 1801,² and then was later edited and re-published in 1807³ and 1827.⁴ The first two editions, both titled *Anleitung zum Harfenspiel*, contain rather similar material, while the third edition, *Backofen's Harfen-Schule*, includes the first movement of Backofen's Harp Concerto with both fingerings and pedal indications.⁵ It would appear from the updated introduction that this final edition is directed towards the 19th-century double-action pedal harp,⁶ but all the pieces are clearly composed for the earlier 18th-cen-

1 Heidrun Rosenzweig, "Johann Georg Heinrich Backofen: die deutsche Harfe um 1800", in: idem (ed.), *Historische Harfen: Beiträge zur Theorie und Praxis historischer Harfen*, Dornach/Basel: Musik-Akademie der Stadt Basel 1991, 80–97; Hans Joachim Zingel, "Backofen, Johann Georg Heinrich", in: *Musik in Geschichte und Gegenwart*, 2. Ausgabe, *Personenteil*, Bd. 1 (1999), Sp. 1584–1586.

2 Johann G. H. Backofen, *Anleitung zum Harfenspiel*, Leipzig: Breitkopf & Härtel 1801.

3 Johann G. H. Backofen, *Anleitung zum Harfenspiel*, Neue Ausgabe, Leipzig: Breitkopf & Härtel 1807.

4 Johann G. H. Backofen, *Backofen's Harfen-Schule mit Bemerkungen über den Bau der Harfe und deren neuere Verbesserungen*, 3rd edition, Leipzig: Breitkopf & Härtel 1827.

5 Perhaps this was the Concerto performed in Leipzig by Dorette Scheidler-Spohr (1787–1834), harpist and first wife of Louis Spohr (1784–1859). Newspapers mention that on 16 December 1805 she played a "Concert" by Backofen and a "Fantaisie" on the harp. See *Allgemeine Musikalische Zeitung*, Achter Jahrgang, no. 15, Leipzig: Breitkopf & Härtel 8 January 1806: 206, 230; *Berlinische Musikalische Zeitung*, no. 104, Berlin 1805: 412.

6 Sébastien Erard (1752–1831) patented the mechanism for the *harpe à double mouvement* between 1800 and 1810. This harp had one row of strings and seven pedals which

tury pedal harp with a single-action mechanism, namely the *harpe organisée*.⁷ Backofen's method is extraordinary in the context of other harp methods of the time.⁸ From 1774 to 1840, over 100 harp methods and study books were written in French or English⁹, but only five in German.¹⁰ When Backofen published the *Anleitung* in 1801, pedal harps were relatively novel for German readers, being much more widespread in France and England. Backofen is not only the sole German writer that discusses pedalling, but his 1801 method is the earliest dated harp method to describe multi-pedalling techniques.¹¹ The three editions of Backofen's method combined are the most comprehensive sources for most aspects of pedalling techniques. The 1801 method includes a pedal notation that shows where and how to pedal and, employing musical examples, explains how and why to choose one ped-

alter each string by two semitones; this mechanism is still used on the standard pedal harp today. The new pedal harp's mechanical possibilities were not fully exploited for years after Erard's invention. An example of a piece that was conceived for the double-action pedal harp and therefore unplayable on the earlier harp with a single-action pedal mechanism is: Frederic C. Meyer, *Adagio patetico and Waltz of the Black Forest*, op. 26, London: Cramer, Addison and Beale [late 1830s], (Pl. no. 1993). The first chord of the Adagio bar requires the use of the three adjacent strings E \flat , D \flat and F \flat . On page 8, F \sharp is required, so the F string functions as F \flat , F \natural and F \sharp in the piece.

7 Maria C. Cleary, *The "Harpe organisée", 1720–1840: rediscovering the lost pedal techniques on harps with a single-action pedal mechanism*, PhD dissertation, University of Leiden 2016. See section below: "Harps in the time of Backofen".

8 Like many methods of this period, Backofen's includes a history of the harp, information on harp maintenance and musical examples showing fingerings, ornaments, and pieces.

9 Cleary, *Harpe organisée* (see n. 7), Appendix I, 241–248.

10 Johann C. G. Wernich, *Versuch einer richtigen Lehrart die Harfe zu spielen: wobey die Grundsätze nach welchen dieses Instrument erlernt werden muss, mit der grössten Deutlichkeit, und solcher-gestalt vorgetragen*, Berlin: Winter 1772; Johann Herbst, *Ueber die Harfe, nebst einer Anleitung, sie richtig zu spielen*, Berlin: Rellstabschen 1792; Joseph F. Schwanneburg, *Vollständiges theoretisch-praktisches Lehrbuch zur Davids- und Pedalarfe, mit vielen in Kupfer gestochen Figuren, Notenbeispielen und einem Anhang von Tonstücken, mit Bezeichnung des Fingersatzes*, 1797; Backofen, *Anleitung*, 1801 (see n. 2); Anton G. Heyse, *Anweisung die Harfe zu spielen*, Halle: Hendel 1803.

11 See Table 1 below for a list of harp methods that discuss multi-pedalling techniques.

al over another – techniques which are closely correlated to the usage of enharmonics on the harp. The choice of using an enharmonic note points directly to the 18th- and 19th-century approach to temperament. These pedal and enharmonic choices also imply that a harpist today listens to the acoustical implications of the overtones of the harmonic series while approaching harmony in a historical way.

This article will assess the three editions of Backofen’s harp method as primary sources for historical pedalling, and discusses the most relevant aspects of Backofen’s pedalling techniques that can be used as practical guides to the performance of 18th- and 19th-century pieces by harpists today.

Harps in the time of Backofen

The 1801 harp method was written for the two principal types of harps played in Germany in the 18th and early-19th centuries. The *Hakenharfe*¹² is a single-rowed harp with a series of J-shaped hooks (= “Haken”) that are attached to the neck below the tuning-pins. These hooks are manually turned, usually by the left hand, which prevents the left hand from playing for that instant. The hooks alter the vibrating length of a string by one semitone.

The second type of harp has one row of strings and seven pedals that correspond to the seven notes of the diatonic scale. Each pedal moves by one step, altering the vibrating length of a string in every octave by one semitone. The pedals, found at the base of the harp, are operated by the feet, producing seven additional semitones to the seven pitches of the “open” strings of the instrument. Therefore, each string produces two pitches, resulting in a total of fourteen pitches per octave. The invention of the first harp with pedals is normally attributed to Jacob Hochbrucker (1673–1763) from Donauwörth,

12 Nancy Thym-Hochrein, “Die Hakenharfe: Bauweise, Spieltechnik, Geschichte”, in: Monika Lustig (ed.), *Zur Baugeschichte der Harfe: vom Mittelalter bis zum 19. Jahrhundert: 13. Musikinstrumentenbau-Symposium in Michaelstein am 6. und 7. November 1992*, Michaelstein: Das Institut 1995, 86–103.

Germany.¹³ The earliest pedal harp, with a handwritten label marked “Hochbrucker/Donauwörth 1720” is housed in the Kunsthistorisches Museum in Vienna.¹⁴ The earliest term referring specifically to a pedal harp is *harpe organisée*, found in the *Encyclopédie* by Diderot and d’Alembert in 1765 and 1767, respectively.¹⁵ Today, it is commonly referred to as a single-action pedal harp.¹⁶ Pedals on harps transformed the physicality of the instrument in the 18th century: harpists now used not only their hands for playing, but also, for the first time, their feet. The harpist Nicholas C. Bochsa (1789–1856) underlines this novel feature in his 1813 method:

When the harp began to be known in France, it was about fifty years ago, [...] the modulations were extremely simple, and moving pedals presented no difficulty. This is no longer true today: those more ambitious artists have multiplied the modulations, and moving pedals has become the greatest difficulty of the instrument.¹⁷

Perhaps complex pedalling was the technique that truly divided the amateur harpists from the *virtuosi* of the day.

13 Ludwig Wolf, “Johann Baptist Hochbrucker (1732–1812) und die Harfenmode in Paris”, in: *Musik in Bayern* 31, no. 2, Tutzing: Schneider 1985, 95–114.

14 Inventory no. SAM 565, *Sammlung alter Musikinstrumente*, Kunsthistorisches Museum in Vienna.

15 Casimir M. Oginski, “HARPE”, in: Denis Diderot and Jean Le Rond d’Alembert (eds.), *Encyclopédie ou Dictionnaire raisonné des sciences, des arts et des métiers*, Paris: Briasson 1765, vol. 8: 45–46; Denis Diderot and Jean Le Rond d’Alembert (eds.), *Recueil de planches, sur les sciences, les arts liberaux, et les arts mécaniques, avec leur explication, Tome 22, Quatrième livraison, 248 Planches*, Paris: Briasson 1767, LUTHERIE, Seconde suite, Planche XIX.

16 The word “harp” will be used throughout this article to refer exclusively to the *harpe organisée* with a single-action pedal mechanism.

17 All translations are by the author unless stated otherwise. Nicolas C. Bochsa, *Nouvelle méthode de harpe en deux parties*, op. 60, Paris: Duhan 1813, 21: “Lorsque la harpe commença à être connue en France, il y a environ cinquante ans, [...] les modulations étant extrêmement simples, le jeu des pédales ne présentait aucune difficulté. Il n’en est plus de même aujourd’hui: quelques artistes plus ambitieux ont multiplié les modulations, et le jeu des pédales est devenu la plus grande difficulté de l’instrument”.

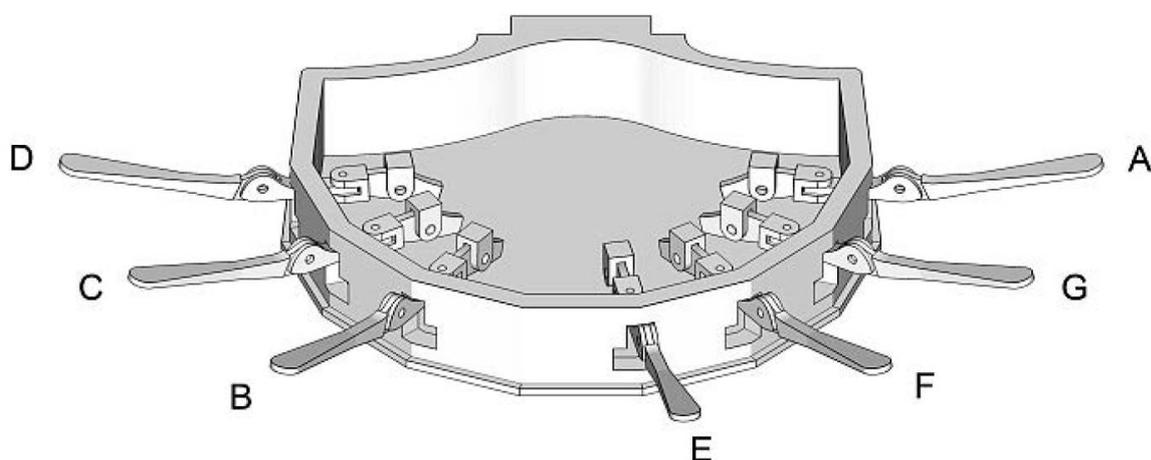


Figure 1: The position of the pedals in the upper position, after Diderot (1767), computer graphics by Vittorio Cazzaniga of “C+G Architetti”, Italy.

Understanding the Function of Pedals

In order to use pedals in a historical way, it is essential to first understand how pedals actually function and how to set-up the harp in a suitable “base key”, according to the necessities of a chosen piece. Two important matters are directly linked to the set-up key on a harp with a single-action pedal mechanism. These matters are the implied temperament indicated by Backofen and most of his contemporary writers on the harp, and the historical approach towards the usage of enharmonics on the harp. Both of these aspects are discussed following a survey of how to pedal according to Backofen.

The harp mechanism works by pressing down and releasing the pedals to alter the required pitch, with two positions for the pedals: either up or down. The upper position (Fig. 1) is the initial one where the mechanism is not in use, the strings are open, and the seven strings in the octave are tuned to a diatonic major scale, usually $E\flat$ major. When a pedal is pressed into the lower position, the vibrating length of the string is shortened, resulting in a pitch that is a semitone higher. For example, when the B pedal is in the upper position, all the B strings sound as $B\flat$. When a pedal is pressed down and in the lower position, the sounding pitch of every B string is $B\sharp$. A pedal can be pressed down and held with the foot in the lower position without effort, as the pedal springs on early pedal harps are light. Alternatively, a

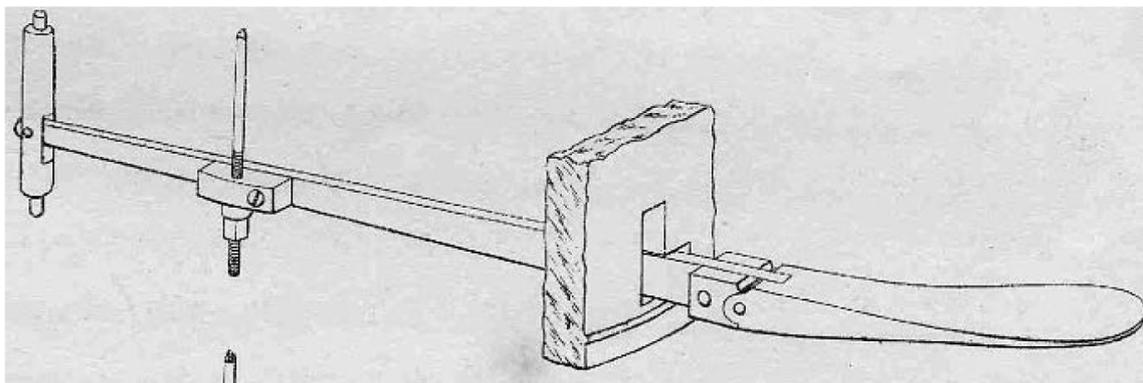


Figure 2: Pierre Erard, *The Harp in its present improved state compared with the original pedal harp*, London: Erard 1821, Plate V. An example of a pedal in the lower position, fixed in the side notch.

pedal can be fixed by sliding it into a side notch (Fig. 2), leaving the foot free to rest on the floor or to move other pedals.

The seven pedals are distributed at the base of the harp: three are on the left-hand side (from left to right): D, C, B; and four on the right: E, F, G, and A (see Fig. 1). A harp set up in the “base” key of E \flat major can play in keys from three flats up to four sharps, resulting in a total of thirteen major (E \flat , B \flat , F, C, G, D, A, E) and minor (C, G, D, A, E) keys. The following pitches are available to the harpist, when the harp is set up in the “base” key of E \flat major:

C \natural , C \sharp , D \natural , D \sharp , E \flat , E \natural , F \natural , F \sharp , G \natural , G \sharp , A \flat , A \natural , B \flat , B \natural .

This includes the twelve semitones of the chromatic scale, with two notes doubled, in this case: E \flat /D \sharp and A \flat /G \sharp (see Fig. 3). There are two ways to achieve the remaining missing enharmonic notes like C \flat , D \flat , E \sharp , F \flat , G \flat , A \sharp , B \sharp , and the remaining keys of D \flat , A \flat , B, F \sharp , C \sharp major and B, F \sharp , C \sharp , F, B \flat , E \flat minor. The first way is to tune the harp to an alternative “base” key rather than to E \flat major, and the second is to replace a note which is not part of the “base” key spectrum with an enharmonic note (Fig. 3).

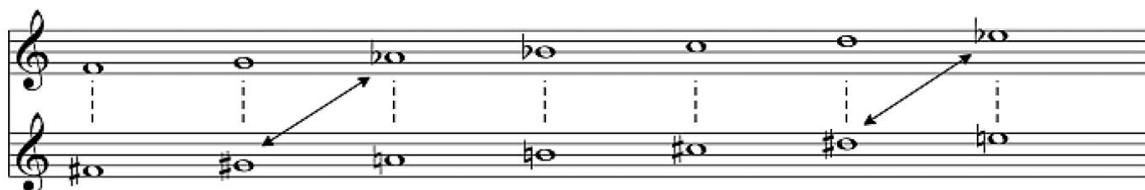


Figure 3: Harp set-up in the “base” key of E \flat major with the fourteen pitches available. The upper staff shows the upper “open” position of the strings; the lower staff shows the pitches available to the harpist when all the pedals are pressed down in the lower position. The doubled notes, E \flat /D \sharp and A \flat /G \sharp , are indicated by arrows.

“Base” set-up key

The initial major key is referred to as the “base” set-up key.¹⁸ This is the key in which a harp is tuned, before playing a piece, where all the pedals are in the upper position. The strings are then said to be in an “open” position. The “base” key determines what fourteen semitones per octave are available to the harpist for an entire piece, or a movement of a piece. The harp can be set up theoretically in any key as a “base” key, the most common set-up keys are E \flat , B \flat or A \flat major.¹⁹ B \flat major is usually suggested as the alternative “base” key to E \flat major in 18th-century harp treatises and methods,²⁰ whereas after

¹⁸ Cleary, *Harpe organisée* (see n. 7), 21–22, 38–42, 83–85. In this present article, the “base” set-up key is assumed to be E \flat major, unless otherwise specified.

¹⁹ For alternative “base” keys, see: François-Vincent Corbelin, *Méthode de harpe: pour apprendre seul et en peu de temps à jouer de cet instrument; avec un principe très simple pour l'accorder*, Paris: l'auteur 1779, 30–31: F and C major; Jacques-Georges Cousineau, *Méthode de harpe suivie d'un recueil de petits airs de differens auteurs*, op. 4, Paris: Cousineau 1784, 14: B, F \sharp and C \sharp minor; Louis-Charles Ragué, *Principes de la harpe*, op. 8, Paris: Le Duc 1786, 11: D \flat and G \flat major; Anonymous, *Méthode de harpe avec laquelle on peut accompagner à livre ouvert toutes sortes d'ariettes et de chansons*, Paris: Boüin 1787, 11, 26: C \flat major. This last solution most likely refers to Cousineau's fourteen-pedal harp.

²⁰ Philippe-Jacques Meyer, *Essai sur la vraie manière de jouer de la harpe avec une méthode de l'accorder*, Paris: l'auteur 1763, 4; Michel Corrette, *Nouvelle méthode pour apprendre à jouer de la harpe avec des leçons faciles pour les commençans [...] et la partition pour l'accorder avec les pédales et sans pédales*, Paris: l'auteur 1775, 2–3; Corbelin, *Méthode de harpe*, 31; Cousineau, *Méthode de harpe*, 14; Jean M. Plane (ed.), *Principes*

1800, A \flat major is more common.²¹ This trend from major keys with fewer flats to those with more flats is mirrored in the repertoire. Works by Philippe-Jacques Meyer (1737–1819), François Petrini (1744–1819) and Jean-Baptiste Hochbrucker (1732–1812) are often in B \flat or E \flat major, or their relative minor keys, whereas 19th-century composers like (Martin)-Pierre d’Alvimare (1772–1839), Louis Spohr (1784–1859) and Bochsa often wrote works in A \flat major, F minor, or in keys that require an A \flat “base” set-up key.²² Backofen is the only writer-composer in the 19th century who still includes B \flat major as an alternative “base” set-up key to E \flat major, and he even seems to propose F major for performing a *Prélude* by Krumpholtz.²³ The inclusion of these more old-fashioned “base” set-up keys are probably aimed at the *Hakenharfe* which is usually set up in F or B \flat major.²⁴ The “base” set-up key, the use of enharmonics, and pedalling are mutually

pour la harpe par J. B. Krumpholtz, Paris: Plane 1809, 14. This method was published in 1809 by Jean-Marie Plane (1774–post-1827), harpist and composer, but if the treatise was actually written by Krumpholtz, then it pre-dates his demise in 1790.

21 Mademoiselle Merelle, *New and complete instructions for the pedal harp in two books*, London: Broderip & Wilkinson 1800, 22; Theresia Demar, *Méthode de harpe divisée en 3 parties*, op. 21, 1ere Suite, Paris: 1800, 12; Xavier Desargus, *Nouvelle méthode de harpe*, Paris: 1803, 2.

22 Cleary, *Harpe organisée* (see n. 7), 84–85.

23 Backofen, *Anleitung*, 1801 (see n. 2), 41; Backofen, *Anleitung*, 1807 (see n. 3), 48; Backofen, *Harfen-Schule*, 1827 (see n. 4), 29. This is both a problematic textual and musical example. Backofen is describing the *synonyme* effect: the effect of employing two notes, usually in rapid motion, to play the same pitch, like E \flat and D \sharp or A \flat and G \sharp . In the 19th century, the effect was compared to the strumming of a mandolin. However, the musical example is an extract from Jean-Baptiste Krumpholtz, *Recueil de douze préludes*, op. 2, Paris: Cousineau [1777], *10ème Prélude*: bars 48–52. The extract is transposed one tone higher than the original *prélude*. The musical example has been transposed to show how to use the *synonyme* effect on a *Hakenharfe* set-up in the “base” key of F major, using the F and E string, with the E hook raised to sound as E \sharp . The sentence preceding the musical example explains how to achieve the same effect on the pedal harp by using E \flat and D \sharp , or A \flat and G \sharp .

24 The *Hakenharfe* can be set up in any key, as much as the *harpe organisée*. However, most of the repertoire for this instrument adheres to the commonly-used keys of that time.

dependent on one another. A composer-harpist may choose a particular “base” set-up key in order to employ particular pedal movements and exploit certain enharmonic notes on the harp. Historical pedal techniques are explained with musical examples by Backofen in the following section.

Historical Pedalling Techniques

The basic foot technique for moving one pedal with one foot, called single-pedalling, consists of three different movements:

1. The whole foot is lifted off the floor,²⁵ the toe is placed on the pedal and then the pedal is pressed down and held until the music demands it to be released. This is the most commonly-used foot movement. Backofen describes the position of the pedal as “not fixed”.²⁶
2. The second pedal movement consists of pressing a pedal down and then fixing it into the lower pedal notch, described as “fixed”.²⁷ This fixing action occurs at the beginning of a piece, depending on the key signature of the work. For example, a piece in F major, with a harp set up in the “base” key of E \flat major, requires that the harpist fixes the A and E pedals into the lower pedal notch before playing.

²⁵ Nicolas C. Bochsa, *A new and improved method of instruction for the harp*, London: Chappell & Co. 1819, 12, 35: “In pressing the Pedal only the extremity of the foot must be used, the heels must be kept elevated”. This is quite different from modern pedal technique, cf. Yolanda Kondonassis, *On playing the harp*, New York: Fischer 2006, 22–23: “Your heels should always rest on the ground”.

²⁶ Backofen, *Anleitung*, 1801 (see n. 2), 49: “nicht gesteckt”. This initial pedal move can be seen in the anonymous illustration *A man approaching a woman playing a harp*, showing a woman in a pale dress and flat pumps with her left foot placed above the D pedal. German, 19th century, design for a book illustration, pen and brown ink, brush and brown wash, 9.2×6.8 cm, New York, Metropolitan Museum, accession no. 52.567.7. www.metmuseum.org/art/collection/search/335766 (13 November 2017).

²⁷ Backofen, *Anleitung*, 1801 (see n. 2), 49: “gesteckt”.

3. The final pedal movement occurs when a pedal which has been previously fixed is released towards the upper “natural” position. This refers to the unfixing or “releasing” of a pedal.²⁸

In his 1827 edition, Backofen offers further advice to harpists when pedalling:

The pedals must never be moved at the same time as striking the strings, but rather a moment before; otherwise a disgusting buzzing will occur. For the same reason, they must not be released immediately after the striking of the strings. Therefore, it is essential to practice reading the notes, so that the added semitone can be seen a few notes ahead of time. The pedals should not be pressed in a timid manner, but rather boldly; otherwise the strings will not be stopped enough and will buzz.²⁹

These instructions are very similar to Jean-Baptiste Krumpholtz’s (1747–1790) four considerations when pedalling.³⁰

The most important action in historical pedalling techniques is the simple up-and-down movement. The action of fixing pedals is only used in exceptional cases. Harp music up to the mid-19th century curiously lacks pedal markings, but this can be easily explained by putting historical pedalling technique into practice. Pedal markings are redundant in tonal music when the feet movements become the musical gesture. Just as the hands move when reading a score, the feet “read” the accidentals in the score and act upon them.

²⁸ Idem, 49: “aufgemacht”.

²⁹ Backofen, *Harfen-Schule*, 1827 (see n. 4), 30: “Die Pedale dürfen nie gleichzeitig mit dem Anschlag der Saiten – sondern müssen einen Augenblick vorher angetreten werden, sonst entsteht ein widerliches Schnarren. Aus demselben Grunde dürfen sie auch nicht sogleich nach dem Anschlag der Saiten losgelassen werden. Daher ist es wesentlich nötig, sich im Notenlesen zu üben, damit man den zu steckenden halben Ton schon um einige Noten voraus sieht. Die Pedale dürfen nicht ängstlich – sondern müssen keck getreten werden, sonst werden die Saiten nicht genug gepresst und schnarren”.

³⁰ Plane, *Principes par Krumpholtz* (see n. 20), 14–15.

Multi-pedalling

Multi-pedalling is the art of moving either two or three pedals at a time with one foot, consisting of double-pedalling and triple-pedalling. Double-pedalling is the act of moving two adjacent or non-adjacent pedals on one side of the harp with one foot. This is achieved by raising the whole foot and placing it perpendicular to the harp, across the pedals, which are then pressed down together or separately by pivoting the foot. The heel moves an inner pedal and the toe moves an outer one. When the pedals are not adjacent to each other, double-pedalling involves folding away a pedal against the resonance box of the harp, usually the C pedal on the left or the F or G pedal on the right side of the harp. The non-adjacent D and B pedals on the left and the F and A pedals on the right can then be operated with one foot.³¹

Double-pedalling with the left foot, double-pedalling with the right foot

Backofen's methods include an example of double-pedalling with both feet (Fig. 4), and one example of triple-pedalling (Fig. 5). The first example states that "there are also occasions where two adjacent pedals must be pressed down together".³² The left foot presses down the B and C pedals together at the beginning of bar 1, holding them down and then releasing them on the fourth crochet of the bar. The two notes, B \flat and C \sharp , are marked with a line above them indicating to press down the two pedals and hold them down, whereas no notation is used to show the releasing movement on the last cro-

31 The earliest dated evidence of double-pedalling is found in: Jean-Baptiste Krumpoltz, *L'Amante Abandonnée, Air Parodié en français et en italien sur l'Adagio de œuvre XIV, avec accompagnement de harpe ou de forte piano, d'un violon et contrebasse ad libitum*, Paris: [1787 or 1788], 4. The *contrebasse* in the title probably refers to Krumpoltz's invention of the *Contrebasse ou Clavicorde à marteau*, a pedal board that was placed under the harp and played with the feet. It was one of the inventions that Krumpoltz presented to the *Academie Royale de Sciences* in November 1787.

32 Backofen, *Anleitung*, 1801 (see n. 2), 52; Backofen, *Anleitung*, 1807 (see n. 3), 44; Backofen, *Harfen-Schule*, 1827 (see n. 4), 33: "Es gibt auch Fälle, wo 2 neben einander stehende Pedale zugleich getreten werden müssen".



Figure 4: Backofen, *Anleitung*, 1801, 52: Double-peddalling.

Zuweilen muß man mit einem Fuß 3 Pedale zugleich treten, wie aus folgendem Beispiel deutlicher zu ersehen.

 This figure includes a short paragraph of German text at the top, followed by two systems of musical notation. The text reads: "Zuweilen muß man mit einem Fuß 3 Pedale zugleich treten, wie aus folgendem Beispiel deutlicher zu ersehen." The first system of notation is in 3/4 time and features a treble clef with a complex, ascending melodic line that includes a trill-like passage. The bass clef has a simple accompaniment. The second system continues the piece, with the treble clef part showing more complex rhythmic patterns and the bass clef providing harmonic support. The notation includes various accidentals and dynamic markings like 'fis.' and 'b'.

Figure 5: Backofen, *Anleitung*, 1801, 52: Triple-peddalling.

chet of bar 1.³³ The same double-peddalling is required in bar 3, but then the pedals are held down until the end of the example. The lines above the notes

33 See explanation of Backofen's notation below.

are positioned incorrectly on the third crochet of bar 3 (above $c\sharp''$ and $d\flat''$ instead of over the $b\flat'$ and $c\sharp''$).³⁴

Bars 3–4 show double-pedalling with the right foot pressing the G pedal down at the end of bar 2 and releasing it at the beginning of bar 3. The F and G pedals are then pressed down together during the second crochet of bar 3 and held until the end of the piece. Another possible solution would be to press the F and G pedals down together on the last quaver of bar 2, avoiding the $F\flat$ that proceeds the ultimate quaver, but Backofen does not notate this. The G pedal movement in bar 2 is not notated because it is a single pedal movement. The right foot could simply employ single-pedalling, by fixing the G pedal at the end of bar 2 and move the F pedal alone in bar 3. However, the point of the example is to show not only that double-pedalling is possible, but also that it is easier and musical, as the pedal movements occur with the changes of harmony, rather than being mere mechanical movements.³⁵

Triple-pedalling

Triple-pedalling occurs when three pedals are pressed down together with one foot. This is usually carried out on the right-hand side of the harp, with the F, G and A pedals, but it can also be performed with the D, C, and B pedals on the left-hand side. Backofen gives an example, writing: “Now and then, one must press down three pedals with one foot”.³⁶ The sub-dominant chord on $A\flat$ with an added 6th is followed by a diminished 7th chord on $A\flat$,

³⁴ Helmholtz system of pitch notation. The musical example in the 1801 and 1807 editions is the same; it is printed differently in the 1827 edition.

³⁵ P. I., “On harps”, in: William Ayrton (ed.), *The Harmonicon*, London: Pinnock 1826, vol. 9, pt. 1, 31: “It so happens that the two pedals required are next to one another on the harp, and an expert player will press both with the right foot at once; but the safest mode is, to fix the $F\sharp$ at the commencement of the bar, and then go to the $G\sharp$ pedal, but should the notes descend again immediately, thus: To press both pedals at once will be the best mode.”

³⁶ Backofen, *Anleitung*, 1801 (see n. 2), 52; Backofen, *Anleitung*, 1807 (see n. 3), 44; Backofen, *Harfen-Schule*, 1827 (see n. 4), 34: “Zuweilen muss man mit einem Fuss 3 Pedale zugleich treten”.

which serves as a pivot chord resolving to the cadential 6/4 chord on the dominant chord of B \flat , then resolving to the tonic (Fig. 5). The notated G \flat in the music shows the harmony while the harpist knows to use the enharmonic F \sharp .³⁷ This example is followed by this extended explanation:

For women this is, however, very difficult because they have shorter feet than we do, so they cannot press with equal strength the three pedals F, G and A, because of the middle pedal, even if they were able to reach them. I therefore want to strongly advise the ladies that at such places as earlier described, should they occur, that the inner pedal, namely the G, which has no reason to be pressed down, can be lifted up [beforehand] with the toe and leaned against the body of the harp, but immediately afterwards should again be folded down.³⁸

The same musical example is included in the 1827 edition, indicating to fold up the G pedal as an alternative to triple-peddalling. The double-peddalling is notated with an “x” on the third crochet of bar 1, and the unfolding movement is notated with “xx” at the beginning of bar 4.³⁹ Double-peddalling with the G (or C) pedal folded up can substitute triple-peddalling in most cases in the *harpe organisée* repertoire.⁴⁰ Two musical examples of double- or triple-

37 This approach to notating music in order to respect the rules of tonal harmony is often lost in modern harp editions, where enharmonic alternatives are notated and thus the visual score makes no sense for understanding harmony.

38 Backofen, *Anleitung*, 1801 (see n. 2), 52; Backofen, *Anleitung*, 1807 (see n. 3), 45: “Für Frauenzimmer ist dies allerdings sehr beschwerlich, denn da sie kürzere Füße haben, als wir, so können sie die 3 Pedale F, G und As, wenn sie selbige auch zugleich erreichen, dennoch des mittlern Pedals wegen, nicht gleich stark treten. Ich wollte daher den Frauenzimmern unmassgeblich anrathen, wenn solche Stellen, wie die erst angeführte, vorkommen sollten, das zwischen inne liegende Pedal, nemlich das G, welches ohnehin umsonst getreten wird, vorher mit der Fussspitze aufzuheben, und an den Körper der Harfe anzulehnen, es aber sogleich nachher wieder herunter zu treten”. Similar advice is found in the 1827 edition, page 34–35.

39 Backofen, *Harfen-Schule*, 1827 (see n. 4), 34.

40 Exceptions occur when three pedals on one side of the harp are required to alter the pitch of three strings contemporarily. Pierre d’Alvimare, *Trois Grandes Sonates pour la harpe*, op. 18, Paris: Erard 1802; Maria C. Cleary, “The Invention of the 18th Century: the *harpe organisée* and Pedals”, in: *American harp journal*, 27 (2018), 51–52.

pedalling are found in Backofen's *Fantaise* in the 1807 *Anleitung*,⁴¹ and in his Concerto from the 1827 edition (bars 15, 16 and 17).⁴²

There are many explicit examples of multi-pedalling in the harp repertoire of this time (see Table 2, p. 452). One of the earliest works is *Les Folies d'Espagne* by François Petrini (1744–1819) which includes the instruction “to take the F and A pedals together, lowering the G pedal at the same time”.⁴³ Figure 6 shows the work from bar 122 onwards. This instruction is marked with an asterisk pointing to bar 125, where the A and F pedals change from A \flat and F \natural to A \natural and F \sharp in a semiquaver motion.⁴⁴ The three pedals are pressed down in bar 125 and then released with the F \natural in bar 126. Triple-pedalling can also be used in bars 23, 107 and 125. Alternatively, the whole piece works with only double-pedalling movements. The work contains no G \sharp , so the G pedal could be folded away from the beginning of the piece leaving the right foot to move the F and A pedal with ease. Examples of double-pedalling and combinations of moving the F and A pedals separately (using a pivoting motion with the heel and toe) are found in bars 7–8, 23, 39–41, 107, 141–142 and 173–177.

In Louis Spohr's harp pieces, every time a pedal is folded or unfolded the harp part contains at least a half-bar's rest, or the texture thins out to one hand, or an implicit or explicit *fermata* is written in the music. The harpist therefore has ample time and the necessary composure to fold or unfold a pedal and the physicality of these gestures become an inherent part of the music. Multi-pedalling is not explicitly written in the scores, but the rhetorical silences in Spohr's harp parts are tacit clues to this virtuosic technique

41 Backofen, *Anleitung*, 1807 (see n. 3), 68 (bar 20), 71 (bar 21). This *Fantaisie* is not part of the first edition of the *Anleitung* but was possibly performed by Dorette Spohr in Leipzig in 1805 (see n. 5).

42 Backofen, *Harfen-Schule*, 1827 (see n. 4), 44–46.

43 François Petrini, *Les Folies d'Espagne avec XII variations pour la harpe*, op. 28, no. 2, Paris: Naderman 1789.

44 I have found no explanation why this instruction is written so late in the score, considering that multi-pedalling is possible in several passages before bar 125. The piece is a set of variations with a repeating harmonic structure that returns in nearly every variation, so it would make musical sense to use the same foot gesture for harmonically parallel passages.



Figure 6: F. Petrini, *Les Folies d'Espagne*, bars 122–144.

and to the harpist Dorette Spohr's (1787–1834) extraordinary wizardry on pedals.⁴⁵

⁴⁵ Cleary, *Harpe organisée* (see n. 7), 179–180, Tables 6.5, 6.7.

Das ex in Mordenten muss mit dem linken Fuss getreten werden, weil der rechte schon mit dem Axx beschäftigt ist.

Eben so verhält es sich mit folgendem Beispiel: Hier muss das h mit dem rechten Fuss getreten werden.

Figure 7: Backofen, *Harfen-Schule*, 1827, 35: Crossed foot pedalling.

Crossed foot pedalling (Left foot on E pedal, right foot on B pedal)

This pedal move entails using either foot for pedals on the opposite side of the harp and is introduced in the 1827 edition of Backofen's method. He explains and includes a musical example as shown in Fig. 7. The E [with an] "x" on the mordent must be pressed down with the left foot, because the right foot is already busy with the A "xx". The next example is similar: here the B must be pressed down with the right foot.⁴⁶ Though there is no written evidence of it in any harp treatise until 1827, the technique of using the left foot for the E pedal (on the right-hand side of the harp) is a natural consequence of double-pedalling. Musical examples can be found in Backofen's Concerto (bars 45, 54, 55, 58, 59, 67, 68, 69),⁴⁷ Krumpholtz's *10^{ème} Prélude*, op. 2 (bars 24, 27, 30), and also in Spohr's *Fantaisie pour la harpe*, op. 35 (bars 107, 142–44).

Pedal notes

Another special pedal technique is included in Backofen's final edition of his method, even though the first musical example is in Philippe-Jacques Meyer's, *Essai* of 1763. The pedals that alter the resonating length of the string⁴⁸

⁴⁶ Backofen, *Harfen-Schule*, 1827 (see n. 4), 35.

⁴⁷ Dorette Scheidler-Spohr performed Backofen's Concerto in 1805, so it can be presumed that using the left foot to move the E pedal was part of her technique. See n. 5.

⁴⁸ Pedal harps can have additional pedals, like the *pédale à renforcement*, that is an effect pedal and does not alter the pitch of a string.



Figure 8: Backofen, *Harfen-Schule*, 1827, 32: Pedal notes.

can produce pitches on their own, which can, in fact, be a beautiful musical gesture: if a string is plucked and then the pedal pressed down or released, the pedal movement produces another sounding note – either a semitone higher or lower – where no intermediary pitches between one semitone and another are audible. This is commonly called a pedal slide or *glissando* and will be referred to here to as “pedal notes” as there is no 18th- nor 19th century standard term.⁴⁹ A pedal note is only audible if the string is still resonating; the second note, when “played” by the pedal, is invariably softer since it is produced merely from the string’s vibrations. The resulting articulation is like a slur, where the first note is strong and the second is weak. Pedal notes are usually notated actually with a slur. The effect can be used in the treble part of the harp during fast passages, but is even more effective in a slow-moving bass line because the bass strings ring longer.

⁴⁹ The first source for pedal notes is found in the earliest dated harp method treatise, Philippe-Jacques Meyer, *Essai* (see n. 20), Tab. VI, Fig. 96; Anthony Maydwell, *A translation and comparative study of two methods for harp by Philippe-Jacques Meyer from 1763 and 1773*, MA Thesis, University of Western Australia 1982, 163–165. The technique also exists in at least five other harp methods, including Corbelin, *Méthode de harpe* (see n. 19), 81; Plane, *Principes par Krumpholtz* (see n. 20), 60; Benoît Pollet, *Méthode de harpe*, Paris: l’auteur 1817, 45; Stéphanie Félicité de Genlis, *Nouvelle méthode pour apprendre à jouer de la harpe en moins de six mois de leçons*, Paris: Duhan 1802, 33; Bochsa, *Nouvelle méthode de harpe* (see n. 17), 55.

The notation for pedal notes in Backofen's third method (Fig. 8) marks the strings that are to be plucked with the sign ']', and after the notes have faded away, one lets go of the pedal quickly so that the strings marked 'o' will sound, without striking the string again.⁵⁰ The first two crochets of each bar in the bass line are plucked. In bar 1, the E \flat octave is played with its enharmonic equivalent D \sharp ; the D pedal is released in the third crochet and will then sound as D \natural .

An important musical example of pedal notes can be found in Mozart's *Concertante a La Harpe, e Flauto*.⁵¹ In the third movement *Rondo*, bars 728 and 732 require pedal notes with the B and F pedals in the bass line and bar 655 could be played as a pedal note with the G pedal in the melody line.

Within Backofen's three editions and musical examples every possible pedal technique is discussed, including single-, double- and triple-pedalling, crossed foot pedalling, and pedal notes. All of these techniques were invented on a *harpe organisée*, and most are still used today on double-action pedal harps.

Table 1 lists the five harpist-authors who describe various aspects of multi-pedalling in their harp methods. Table 2 lists the pieces that explicitly require these expert techniques. This paltry list shows the rarity of these practices among the common harpists of the period, and that these techniques were probably exclusively used by few harpists: the true *virtuosi* of the 19th century. Most of the harp repertoire requires only single-pedalling movements, so the more complex movements were not necessary for the amateur players when performing and enjoying the harp.

⁵⁰ Backofen, *Harfen-Schule*, 1827, 33: "Man spielt nämlich blos die mit einem ']' bezeichneten Saiten, und nachdem sie nach dem Werth der Noten ausgeklungen haben, lässt man geschwind das Pedal los, so klingen die mit 'o' bezeichneten Saiten, auch ohne Anschlag, noch nach". See Fig. 8.

⁵¹ Wolfgang A. Mozart, *Concertante a La Harpe, e Flauto*, KV 299, MS, 1778.

Table 1: Methods which include multi-pedalling techniques, 1801–1833

Author	Title	Date	Place	Page
Backofen	<i>Anleitung zum Harfenspiel</i>	1801	Leipzig	51
Backofen	<i>Anleitung zum Harfenspiel</i> , 2 nd ed.	1807	Leipzig	43
Desargus	<i>Cours complet</i> , 2 nd ed. ⁵²	1812	Paris	37
Bochsa	<i>Nouvelle méthode de harpe en deux parties</i> , op. 60 ⁵³	1813	Paris	51
Challoner	<i>A new receptor for the harp</i> ⁵⁴	1816	London	22–23
Bochsa	<i>A new improved method of instruction for the harp</i> ⁵⁵	1819	London	43
Backofen	<i>Backofen's Harfen-Schule</i> , 3 rd ed.	1827	Leipzig	34–35

Table 2: Repertoire which specifies multi-pedalling techniques

Author	Title	Date	Place
Krumpholtz	<i>Amante abandonnée</i> ⁵⁶	1788	Paris
Petrini	<i>Les Folies d'Espagne</i> , op. 28, no. 11 ⁵⁷	[1800]	Paris
Naderman	<i>Thèmes favoris de l'opéra des bardes</i> ⁵⁸	1805	Paris
Dauprat	<i>Air écossais varié pour cor et harpe (ou piano)</i> , op. 22 ⁵⁹	Pre-1837	Paris
D'Alvimare	<i>Trois grandes sonates pour la harpe</i> , op. 18 ⁶⁰	[1802]	Paris

52 See n. 21.

53 See n. 17.

54 Neville Butler Challoner, *A new preceptor for the harp*, op. 16, London: Skillern 1816.

55 Bochsa, *A new and improved method* (see n. 25).

56 See n. 31.

57 See n. 43.

58 François Joseph Naderman, *Thèmes favoris de l'opéra des bardes*, Paris: Imbault 1805.

59 Louis François Dauprat, *Air écossais varié pour cor et harpe (ou piano)*, op. 22, Paris: Zetter [1837].

60 See n. 55.

Figure 9: Backofen, *Anleitung*, 1807, 42: Backofen's three-stave pedal notation.

Notation

Backofen proposes a unique notation showing which pedals to move and how to move them. He uses a notation with three music staves: the upper and lower staves are for the right and left hands, and the pedal movements are notated on an inner stave. A systematic use of the pressing-down-and-holding pedal movement, without fixing for several bars at a time, can be noted:

In the following example, each pedal [movement] is shown, those in the middle stave, denoted with a line [—], are not fixed, but only those marked with an “+”. Those with an “^o” are to be unfixed or [released].⁶¹

⁶¹ Backofen, *Anleitung*, 1801 (see n. 2), 49–51; Backofen, *Anleitung*, 1807 (see n. 3), 42–44: “Im folgenden Beyspiel werden diejenigen Pedale, die ich in der mittlern Linie anführe, und die mit einem Querstrich bezeichnet sind, nicht gesteckt, sondern nur die mit einem ‘+’ bezeichneten. Die mit einem ‘^o’, werden aufgemacht”.

Figure 9 shows the first page (bars 1–20) of an extract from a “Concerto by Krumpholtz”⁶² for a harp set up in the “base” key of E \flat major.⁶³ In bar 1, the A pedal is unfixed before beginning the piece. In bar 3, the left foot presses the B pedal down and holds it until bar 6 where it is then released in order to play the second quaver in the bass. In bar 5, the right foot fixes the A pedal, marked with a “+”. In bar 7, the right foot presses the F pedal down and holds it until the first crochet of bar 10 where the F is released to play the second quaver in the bass. On the second crochet of bar 10, the right foot presses down the E pedal, holding it until the beginning of bar 14, where it is fixed in the lower notch. In bar 11, the left foot presses the C pedal down and holds it until bar 14 where it is then released in order to play the second quaver in the bass. With both feet now free, the left foot presses the B pedal down, the right foot presses the G pedal down in bar 15, and both are held until the first crochet of bar 18, where the B pedal is fixed and the G pedal is released in order to play the G \natural on the second quaver of the bar. On the second crochet, the F pedal is pressed down and then in bar 19, the D pedal is pressed down with the left foot.

Figure 10 is the second page of Backofen’s pedal notational system. Bar 29 shows the first example in his method of double-peddalling with the F and A pedals with the right foot. The example is an unusual case of double-peddalling, due to the harmonic progression and that, in this situation, both pedals must be unfixed from a fixed state. Leading up to bar 29, the A pedal has been already fixed from bar 5. The F pedal is fixed in bar 26, in order to leave the right foot free to release the E pedal in bar 27. In unfixing both the F and A pedals, the right foot presses and pushes them out of the pedal notches to the right, and then releases them.⁶⁴ To carry out this movement, the G pedal would need to be folded away in bar 25 from the second crochet onwards,

⁶² Backofen, *Harfen-Schule*, 1827 (see n. 4), 33. He does not specify the origin of the work in the 1802 or 1807 editions.

⁶³ The harp is set up in E \flat major, because the piece requires a D \sharp in bar 19 and Backofen indicates to use the D pedal for the D \sharp . In bar 35, the notated D \flat in the upper stave is played as a C \sharp as notated in the middle pedal stave.

⁶⁴ Krumpholtz *Recueil*, op. 2 (see n. 23), *12ème Prélude*: this same pedal movement can be found in bar 21.

The image shows a musical score for harp, consisting of four systems of three staves each. The top staff is the right-hand melody, and the bottom two staves are the left-hand accompaniment. The key signature is one flat (B-flat), and the time signature is 3/4. The word "Pedale." is written above the first system. Pedal notation is indicated by horizontal lines with a minus sign (-) for pedal down and a plus sign (+) for pedal up. The notation shows various pedal changes throughout the piece, including a double pedal change in the second system. Measure numbers 6, 11, and 16 are marked at the beginning of their respective systems.

Figure 10: Backofen, *Anleitung*, 1807, 43: Backofen's three-stave pedal notation.

which Backofen does not discuss in this musical extract. To avoid this difficult and most risky of all pedal moves, Backofen suggests:

For those for whom it would be too difficult to move these two pedals, namely the F and A \flat , together, they can thereby be helped by letting the F \sharp vibrate only for three

quavers and then dampening the strings on the fourth beat; the pedal can then be released, therefore making it easier to release the A \flat .⁶⁵

This means that the F pedal is released after damping the F string in the bass on the fourth quaver of bar 28, thus leaving the right foot free to move quickly to the A pedal in order to release it in time to play A \flat in bar 29. In the 1827 edition, Backofen offers another solution to avoid double-pedalling by instructing the harpist to play the A \flat in bar 29 with its enharmonic alternative of G \sharp .⁶⁶ Backofen provides the amateur harpists with an easy solution to avoid this unusual double-pedalling movement, of unfixing two pedals simultaneously. This sequence of two diminished 7th chords in bars 23 and 25 is one of the most frequently used harmonic progressions in the *harpe organisée* repertoire, usually in situations where the diminished 7th chord on F \sharp is prepared and resolved to keys like F or C minor, or some close tonal area which contains A \flat and F \natural .

There are several issues worth noting regarding Backofen's approach to pedalling. Firstly, the marking "°" does not differentiate between the action of unfixing a fixed pedal and releasing a pedal that has been simply pressed down and held. Indeed several "°"s are omitted from the score: bar 6 for the B, bar 10 for the F, bar 14 for the C and bar 18 for the G pedal. These omissions could be due to a publishing error, but considering all of the omissions are pedals that have been simply pressed down, perhaps the marking was not necessary for a harpist at the time who knew when to release a pedal by reading the music. The notation marking "°" is used to indicate an unfixing pedal movement for the B pedal in bar 25, the C and E in bar 27 and the F and A pedals in bar 29. This notation is cumbersome and occupies a great deal of space, thus Backofen revises it in his 1827 edition, writing the symbols between two music staves: a dash "—" to indicate the pressing-down move-

⁶⁵ Backofen, *Anleitung*, 1801 (see n. 2), 51; Backofen, *Anleitung*, 1807 (see n. 3), 43: "Diejenigen, für die es zu schwer fallen möchte, diese 2 Pedale, nemlich das F und As beynahe zugleich aufzumachen, können sich dadurch helfen, dass sie das Fis vorher nur drey Achtel lang singen lassen, und bey dem vierten die Saiten dämpfen, indessen können sie das Pedal aufmachen, und also um desto bequemer das As auflösen". This is not included in the 1827 edition.

⁶⁶ Backofen, *Harfen-Schule*, 1827 (see n. 4), 34, bar 29, or second bar of this page.

ment, an “=” (transformed from the 1801 and 1807 “plus” sign “+”) for fixing, an “ō” to indicate the preparation of the foot on a certain pedal which will soon be unfixed, and finally an “°” for indicating a normal releasing movement of a pedal that has been simply held down. He also suggests a different sequence of pedal moves (see bars 5–6, 10, 14, 18, 22, 24–30).

The second issue is the way in which pedals are sometimes held down, like the E pedal in bar 10 and the B pedal in bar 15, and then fixed at the last moment, just before the foot is required to move another pedal. This shows that the foot movements are not prepared beforehand. Both pedals could have been fixed from bars 10 and 15, but that would imply that the harpist must read several bars in advance, namely five and four bars in advance, in order to know that those pedals could be fixed. These two situations are revised in the 1827 edition, so pedals are fixed at the earliest possible moment.

Some pedal solutions in this last edition lead towards a modern approach to pedalling, where the “third stave”, even albeit a virtual one, is read by the harpist and is integral to the score. This is in drastic opposition to a more historical and musical approach whereby the harpist, in the act of reading the music, can deduce the foot movements. Backofen’s unique 1801 pedal notation is fascinating, as it shows that pedals can be simply pressed down and held over several bars. Moreover, this action would appear to have been the rule, rather than the fixing of pedals in the lower notch.

Enharmonics

Pedalling involves the physical act of moving the pedals, but also entails knowing which pedal to choose. On the *harpe organisée*, the same pitch can sometimes be played on two different strings in each octave,⁶⁷ meaning that the harpist can choose either the notated pitch or its enharmonic when a written note is sometimes not ‘naturally’ available on the harp. The above example of triple-pedalling in Fig. 5 demonstrates this. A harp set up in the

⁶⁷ See the above section “Understanding the function of pedals”.



Figure 11: Backofen, *Anleitung*, 1807, 45: Krumpholtz's rule in two musical examples.

“base” key of $E\flat$ major does not include, for example, the pitch of $G\flat$,⁶⁸ and so this pitch can only be played as $F\sharp$ using the F string. However, enharmonics are often employed even when the pitch *is* part of the tonal spectrum of the instrument. The reason is principally a musical and not a functional one. Krumpholtz explains this approach:⁶⁹

To facilitate the execution of moving the pedals for all music composed for the harp: the author in his op. XI sometimes indicates a $G\sharp$ in place of an $A\flat$ in order not to release the $A\flat$ which is found in the key signature, or the $C\sharp$ in place of a $D\flat$, and the $D\sharp$ in place of the $E\flat$ [...]. By observing this method in general, one will find fewer difficulties on this instrument.⁷⁰

⁶⁸ A harpe organisée set up in the “base” key of $D\flat$ major does contain the pitch of $G\flat$. See for instance Louis Spohr, *Sonate*, WoO 27, Manuscript, [1806–1807], uses this set-up “base” key and the harp part is in F minor, while the violin part is in E minor.

⁶⁹ Jean-Baptiste Krumpholtz, *Deux symphonies pour la harpe seule ou avec accompagnement de violon*, op. 11, Paris: Naderman 1784.

⁷⁰ Idem, frontispiece. “Pour faciliter l’exécution dans le maniement des Pédales [sic] pour toute Musique quelconque composée pour la Harpe: l’Auteur indique quelque fois dans son Œuvre XI^e le Sol \sharp en place du La \flat pour ne pas décrochez le La qui se trouve naturel à la Clef, ou bien Ut \sharp en place de Re \flat ainsi que le Re \sharp au-lieu de Mi \flat [...]. En observant généralement cette méthode, on trouvera bien moins de difficultés dans cet instrument”. The editions of this work by Cousineau and Momigny do not include these instructions.

I refer to this approach as “Krumpholtz’s enharmonic and pedal rule”. The rule contains information on the “base” set-up key of the harp.⁷¹ Krumpholtz instructs the player to use C♯ as an enharmonic for D♭ and D♯ as an enharmonic for E♭ (see also Fig. 11). Therefore, on a harp tuned in E♭ major the harpist has the possibility of playing D♮ and D♯, but not D♭. Every D♭ is therefore played as C♯. Other aspects include Krumpholtz’s curious recommendation to prioritise the sharp pitches, as well as his seemingly unnecessary overuse of enharmonics, substituting the notated A♭ and D♭, with the enharmonics G♯ and D♯. These enharmonic pedal moves are pressing-down pedal movements, rather than releasing-upwards ones. Consider the situation of a harp set up in the “base” key of E♭ for a piece in F major where the harpist fixes the A and E pedals in the lower notches before playing. The historical approach entails taking the initial tonality of the piece and its individual set-up of the pedals as the new “base” key, and the harpist tries to remain true to this “base” set-up key for the remainder of the work. This means that any accidentals or fleeting modulations are added (a downwards-pressing action) rather than subtracted (an unfixing-pedal action) from the tonality of the piece. This approach results in fewer unfixing movements of the pedals – the principal cause of extra-musical noises – and an increase of simple pressing-down-and-holding movements. This downwards-pressing action creates a physical tension in the harpist, which is then relaxed as the pedal is released and the music returns to the main tonality.

Backofen reiterates Krumpholtz’s rule:

[...] when the A is not already in the scale of the key of the piece to be played, as for example, in A♭ major, F minor, E♭ major and C minor, it must be made as often as possible with the G♯; it would then be necessary that the modulation go into the aforementioned keys in another section of the music, and stay there. There is also the case with E♭, which must be made as much as possible using D♯, especially in F major and D minor, as can be seen from the following examples.⁷²

71 This does not imply that all works by Krumpholtz were conceived for a harp in the set-up “base” key of E♭ major. At least four of Krumpholtz’s *Préludes* require an A♭ major set-up “base” key.

72 Backofen, *Anleitung*, 1807, 45: “[...] das As wenn es nicht schon in der Skala des Grundtons des abzuspielenden Stückes liegt, wie z. B. in As dur, F mol, Es dur, C mol, es

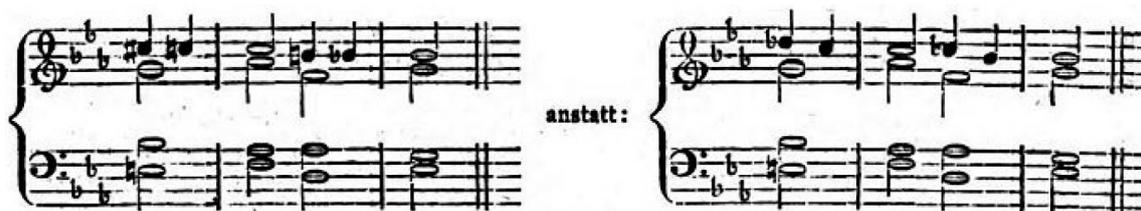


Figure 12: Backofen, *Anleitung*, 1801, 49: Notation of harmony.

Harmony and Enharmonics

The 1807 edition includes two short four-bar musical extracts showing this approach to pedalling and enharmonics (Fig. 12). The first example is in G minor; the A pedal is fixed in the lower notch before playing. Bar 1 contains an $A\flat$ in the diminished 7th chord on the second crochets, but Backofen suggests using the enharmonic $G\sharp$, which resolves to the $G\flat$ on the fourth crochets. The G string is thus plucked thrice in this bar. This signifies that the sounding pitch of $G\flat$ and consequently the overtone series of $G\flat$ are abruptly stopped when the string is used for the second crochets, $G\sharp$. When the diminished 7th chord is resolved to the sub-dominant chord of C minor, once again the overtone series of $G\sharp$ is stopped by re-striking the G string for the $G\flat$ on the fourth crochets. If the A string had been used to sound as $A\flat$, the resonance of this string and the whole overtone series of $A\flat$ would linger over the C minor chord. Using the G string thrice means that the natural resonance and overtones on the harp are controlled by the use of enharmonics; the harmonic tensions of a diminished chord are mirrored in the pressing-down foot movements on the pedal. The resolution chord is not only a resolution in harmonic terms, but also a physical foot resolution when the G pedal is finally released.

The second example shows two similar situations for the left foot. The D string is employed thrice: first as $D\flat$ on the upbeat of bar 1, then as $D\sharp$, as

so oft als möglich durch das Gis gemacht werden muss, es müsste denn sein, dass die Modulation in einem anderen Tonstücke förmlich in erwähnte Tonarten überginge, und sich darin verweilte. Eben so verhält es sich auch mit dem Es , welches besonders in F dur und D mol so viel als möglich durch Dis gemacht werden muss, wie aus folgenden Beyspielen [...] zu ersehen ist". This is not included in the 1801 nor the 1827 edition.

the enharmonic of E \flat , and then again for the notated D \sharp . The C string is used for the sounding pitches of D \flat (using the enharmonic C \sharp) and C \sharp . This latter solution adheres to all of the above-mentioned harmonic and acoustic criteria, but it is also a mechanical necessity, as a harp set-up in the key of E \flat major does not include D \flat as a sounding pitch.

Backofen writes about this relationship between harmony and enharmonics:

There are in the works for pedal harp (particularly in movements by Krumpholtz), passages which are easy for those harp players who are very skilled in reading music, [in using the] pedals, and (for those who already have sufficient theoretical knowledge of *basso continuo*), in anticipating the harmonic digressions [enharmonics]; but for the players who do not have these skills to a high degree, [these works] might seem impossible to play. Among these are, above all, rapid changes [...]. Before, however, I must remark that the French usually put the $\sharp 6$ instead of the $\flat 7$, which they probably do only with the intention of indicating more clearly the pedals to be engaged.⁷³

The first example in Fig. 12 shows, according to Backofen, the typical “French” way of writing for the harp, where augmented sixth chords are notated, hence becoming instantly the pedal solutions for the harpist (see Krumpholtz rule, where a notated D \flat is played as C \sharp). The second example on the right is the same music, but notated with diminished 7th chords. This would point to cultural differences in naming chords and understanding their various functions. If Backofen’s statement was founded upon evidence that French harp composers notated scores using the enharmonic solution for ease of reading rather than for musical reasons, it would constitute a

⁷³ Backofen, *Anleitung*, 1801 (see n. 2), 49; Backofen, *Anleitung*, 1807 (see n. 3), 41: “Es giebt in den Kompositionen für die Pedalharfe (besonders in den Krumpholtzischen) Sätze, welche wohl für denjenigen Harfenspieler leicht sind, der sehr fertig im Notenlesen, in den Pedalen, und (welches schon viele theoretische Kenntnisse des Generalbasses voraussetzt) im Voraussehen der Ausweichungen ist; demjenigen aber, der diese Eigenschaften nicht in so hohem Grade besitzt, unausführbar scheinen. Hierunter gehören vorzüglich rasche Übergänge [...]. Vorher muss ich aber noch bemerken, dass die Franzosen meistens die $\sharp 6$ statt der $\flat 7$ setzen, welches sie wahrscheinlich blos in der Absicht thun, um die zu tretenden Pedale deutlicher anzuzeigen”.

precedent to the modern approach to writing harp scores. Contrary to Backofen's statement, I have found no examples in the repertoire of what he describes.⁷⁴ Even Backofen's extract from the Concerto by Krumpholtz illustrates the opposite (Fig. 10). Bar 35 is notated as a diminished 7th chord on E, and the harpist mentally deduces that the $b7$ chord is played as a $\sharp 6$ chord, playing $C\sharp$ for the notated $D\flat$. The harpist reads the score and then translates the score to pluck a different string and to use a different pedal than those of the notated pitch. Generally, $G\sharp$ and $D\sharp$ are most often used throughout the harp repertoire of Backofen's time as added enharmonic notes. This points to the use of a temperament close to equal where $A\flat$ and $D\flat$ can be replaced by $G\sharp$ and $D\sharp$.

Temperament

A harp with a single-action pedal mechanism can produce fourteen pitches in an octave, with two pitches doubled, begging the question of whether these instruments were built to play in unequal temperaments.⁷⁵ Sadly, the 18th- and early 19th-century harp methods do not specify temperaments, offering only practical advice on how to tune the harp. Backofen writes that:

The pedal harp is tuned in fifths and octaves in a temperament with beats*) in the following way. (It is understood that only the subsequent notes, or new tones are tuned to the preceding ones. For example, after the first octave is tuned purely, there then follows the fifth of $E\flat$, then the octave $E\flat$, the $B\flat$, F, etc.). The left hand strikes the strings, and the right one tunes. *) Temperament with beats means: the fifths should not be tuned totally purely, but have to be tuned down a bit [diminished].⁷⁶

⁷⁴ Other examples of French composers or music published in France that conflicts with what Backofen describes include: Pollet, *Méthode de harpe* (see n. 49), 79: bars 210, 215; Krumpholtz, *Deux symphonies*, op. 11 (see n. 69), *Allegro assai*, bars 31–36. Krumpholtz avers the harpist to use $G\sharp$, for the notated $A\flat$ in bar 31.

⁷⁵ Patrizio Barbieri, "Harps versus pianos: Parisian *querelles* on tuning 1770–1830", in: *Galpin Society Journal* 70 (2017), 45–63. This excellent article discusses temperaments for the harp, but does not consider the musical and acoustical reasons for playing a written note or its enharmonic alternative.

⁷⁶ Backofen, *Anleitung*, 1801 (see n. 2), 11 and Fig. 13.



Figure 13: Backofen, *Anleitung*, 1801, 11: Tuning the harp after Backofen.

Backofen's description points towards an equal temperament tuning (see also Fig. 13), and implies that the mentality of composers and players considered a note and its enharmonic as the same pitch, or at least that the difference was inconsequential. Unequal temperaments are possible on harps with a moveable bridge pin, an "AR/RA" crutch, *crochets* or *fourchettes* mechanism.⁷⁷ In the first two editions of the *Anleitung*, Backofen mentions only one family of Parisian harp builders: the Naderman family with whom Krumpholtz collaborated.⁷⁸ It is not known what harp Backofen played, but perhaps he used a Naderman harp with a *crochets* mechanism. The temperaments of several harps have been measured by Beat Wolf, the leading expert on early pedal harps, who considers that Naderman harps were primarily built for equal temperaments.⁷⁹

Backofen's three methods represent the most comprehensive guide to moving pedals. They provide the basis for all possible pedalling techniques, presented in a context where the music, harmony, acoustics and gesture all come together to create an elegant dance on the pedals of a *harpe organisée*.

⁷⁷ Cleary, *Harpe organisée* (see n. 7), 24–29.

⁷⁸ Backofen, *Anleitung*, 1801 (see n. 2), "Vorrede". Backofen, *Anleitung*, 1807 (see n. 3), "Vorrede". The Naderman harp family consisted of Jean-Henri Naderman (1734–1799), and his son Henri-Pascal Naderman (1783–1842).

⁷⁹ Beat Wolf, "Timeline pedalharps 2012". www.beatwolf.ch/Portals/14/pdf/Timeline_pedalharps_2012.pdf (17 November 2017).

