

A Tribute to Carl Almenröder, the Forgotten Mastermind Behind the Heckel Bassoon

Wouter Verschuren
Rijswijk, the Netherlands

Every bassoonist knows the name Heckel, the dynasty of bassoon makers founded by Johann Adam Heckel in the first half of the nineteenth century and now in its sixth generation of masters producing what many consider to be the Rolls Royce of bassoons. What is much less well known is that there was another name behind Heckel's success: Carl Almenröder.

We usually encounter Carl Almenröder in a succinct first paragraph articles about the Heckel firm: Almenröder is said to have collaborated with one Weber specializing in acoustic theory, and with Johan Adam Heckel he founded a bassoon factory that would soon be dissolved due to disagreements. However, the role Almenröder played in the development of the modern bassoon appears to have been considerable. He was a bassoonist who put his heart and soul into testing and describing what were in his eyes improvements to the bassoon. Perhaps our protagonist deserves more recognition than we give him today for his contribution to the creation of what would later be called the Heckel bassoon.

As a way of doing so, this article focuses on the transition of the eighteenth-century German classical bassoon to a bassoon with new possibilities in line with the demands of the nineteenth century, and the crucial role Carl Almenröder played in this. This article does not seek to examine every single technical change but instead explores Almenröder's motivations for modifying the design of the bassoon, and the people and ideas inspiring him. Those interested in a listing of all the improvements suggested by Almenröder are recommended to read James Kopp's excellent work, *The Bassoon*, from which many of the details of this article are drawn.

The Early Years

Carl Almenröder was born in Ronsdorf, a village near Wuppertal, on 3 October 1786 and died in Wiesbaden on 14 September 1843. He was the oldest of eight children. Much of what we know about him comes from an obituary published in *Cäcilia*, a leading music journal first published in Mainz by B. Schott's Söhne in 1824 by "an association of scientists, art experts, and artists." The jurist, scientist, and composer Gottfried Weber, a name that will come up many times, was editor-in-chief until 1839.

According to the obituary's author, Carl, or Charles as he often called himself, began his musical development by attending the numerous piano and flute lessons his father gave to dilettantes in the evenings. His father, Johann Conrad Almenröder, was an elementary school teacher, but in order to support his large family he taught music to earn extra money on the side. Here lies the seed of Carl's passion for music. However, the account says, his

father had little or no time left for teaching young Carl himself, so he had to learn the fundamentals of music from “mother nature.” Young Carl therefore learned the piano, flute, and the Waldhorn on his own.¹

At the age of thirteen, Carl was given a “worm-eaten bassoon” and on this instrument he began his self-study. Almenröder must therefore have gotten his hands on his first bassoon around the year 1800, meaning that this must have been an instrument with six to eight keys, as described by Etienne Ozi (see Figure 1).

In 1808, the Almenröder family moved from provincial Ronsdorf to Cologne, where his father had found a better job. For the young Carl this must have been a blessing. During these years in Cologne, our beginning bassoonist would have plunged into the city’s active cultural life.

In 1812, he left for Frankfurt-am-Main where until 1814 he held the post of solo bassoonist in the theater orchestra conducted by Carl Joseph Schmitt, who would later encourage him to compose. Here he also had the opportunity to present himself as a soloist.²

After this two-year period, Almenröder returned to Cologne where he was appointed Kapellmeister of the 3rd Prussian Militia. His career in the army was short-lived, for in 1817 he accepted a position with the Mainz theater orchestra. This post would prove to be decisive for the rest of his life, for in Mainz he met Gottfried Weber.

Gottfried Weber

Gottfried Weber was a curious and versatile man. He was born near Mannheim in 1779 and died there in 1839. As a child he began, like Almenröder, on the flute and piano, and later he became proficient on the organ and cello. Like so many at the time, he studied law and after graduating settled as a lawyer in Mannheim where he founded a musical society, composed, and conducted concerts. In 1814 he packed his belongings and left for Mainz, and then in 1819 he was off to Darmstadt where he was appointed prosecutor.³

In 1824, Weber was one of the founders of the musical periodical *Cäcilia* published by Schott’s Söhne. From 1824 until his death in 1839 he was employed there as editor-in-chief, a position that gave him great influence over the content and which provided him with a platform for his own writings. He also published regularly in the *Allgemeine musikalische Zeitung* (AmZ), the oldest music journal in Germany (founded by Breitkopf & Härtel in 1798).⁴

Gottfried Weber was a dilettante in music but his interests were broad. He wrote on acoustic theory, music history, performance practice, and instrument construction, covering a motley variety of topics such as “Improvements of the Flute,” “Improvements of the Horn,”

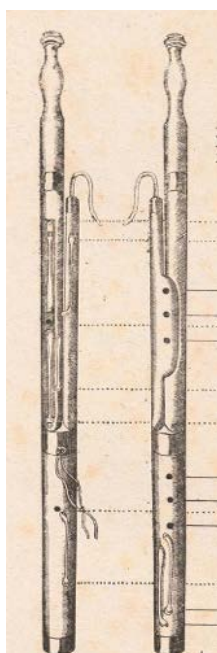


Figure 1. Bassoon diagram from Etienne Ozi, *Nouvelle Méthode de Basson*. Paris, 1803

“Basso continuo in Church Music,” “Improvements of the Timpani,” and “Learning Trills in Singing.”⁵

In the theory of acoustics, Weber was inspired by Ernst Florens Friedrich Chladni (1756–1827). Like Weber, Chladni initially studied law, but after his student days he devoted himself to mathematics and the natural sciences. One of his main achievements is the discovery of so-called Chladni patterns. These are geometric patterns created by vibrating a fine powder, such as sand, on a plate (see Figure 2). Chladni’s discoveries were received with enthusiasm internationally. In 1809 he was invited to show his accomplishments to Emperor Napoleon in Paris.⁶

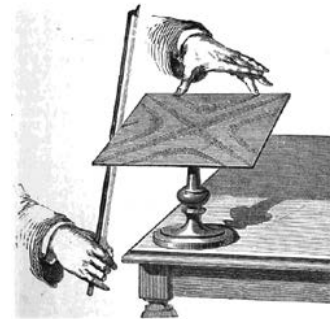


Figure 2. Illustration of a Chladni pattern.⁷

Weber quotes Chladni in one of his articles in the AmZ. In this excerpt Chladni explains that in wind instruments with holes, such as the flute, the oboe, or the bassoon, the air column can be shortened or lengthened by means of opening or closing tone holes. He argues that this knowledge came about empirically and that, in his time, it was not yet possible to substantiate this phenomenon scientifically. Weber responded that in his opinion it was still worthwhile, even without a watertight theoretical foundation, to try with the knowledge of his time to formulate a theory about the working of the tone holes in wind instruments. He published a series of articles under the title: *Versuch einer praktischen Akustik der Blasinstrumente*, or *An Attempt at a Practical Theory of the Acoustics of Wind Instruments*. As this title suggests, Weber was a man of the practical approach, and he wrote a large number of articles on a wide variety of subjects. This practical approach is probably what attracted Carl Almenröder’s attention and eventually led to their collaboration of many years.



Figure 3. One of Weber’s articles, AmZ January 1816 no.4, p. 67.

According to Weber, most wind instruments were afflicted by two main acoustical problems—problems that were magnified on the bassoon. First, he observed that the size of tone holes were not always proportional to the diameter of the bore. Weber believed the tone holes in a conical-bore instrument should get larger as the bore widens moving away from the reed or mouthpiece.

The second point he made is about the distance between holes on wind instruments. Weber argued that as the diameter of the bore increases, the holes should be spaced further and further apart. Until then, the holes on the bassoon were placed together in groups of three so that the fingers could reach the holes comfortably. Weber stated that tone holes should be placed at the position in the bore that is acoustically ideal, rather than at a position that is comfortable for the fingers.⁸ On most wind instruments, he argued, the sixth hole in particular is placed too high in the bore, that is, too close to the reed or mouthpiece, for the purpose of making the grip comfortable for the right-hand ring finger. Indeed, if this hole were to be placed lower in the bore it would be more difficult for the sixth finger to reach. Weber continues to stress in various articles that on the flute, oboe and bassoon, the sixth hole should be placed larger and lower, possibly through the use of a key.⁹

As bassoon-specific challenges, Weber, like many contemporaries, mentioned several issues that were less prevalent in other wind instruments. Namely:

1. The intonation. Tonalities with more than three sharps or flats caused intonation problems. Due to the lack of keys, most chromatic notes had to be produced by fork-fingerings, which generally produced a more covered timbre. The aesthetic ideal of sound in the nineteenth century became increasingly a pursuit of evenness, whereas in previous centuries a variety in timbre was appreciated, giving different characters to different tonalities. Weber denounced the difference in sound between notes. He compared the forked notes on the bassoon, such as the B \flat and C \sharp , to hand-stopped notes on the horn.¹⁰
2. The lack of a proper low B and C \sharp .¹¹ Until the nineteenth century there was one combined fingering for the low B \flat and B. Players were supposed to bend the note up or down with the embouchure. In practice, the low B was therefore rarely used by composers. The low C \sharp was played with a thumb half hole, a practice that was no longer possible from the moment a key was placed on the C tone hole.
3. The bassoon's limited volume. In the growing orchestra of the nineteenth century, the bassoon could be difficult to hear.
4. The deep, oblique drilled tone holes. Weber considered the bassoon's characteristic deep chimneys as a necessary evil.¹² Initially, the long steep-angled holes were necessary to place them in such a position that they could be reached by the fingers but at the same time were spread far enough apart in the bore. Weber came up with the idea that one could use keys to position the holes in the correct position in the bore, and thus avoid acoustic problems, such as impure octaves, caused by the long, slanted tone holes. However, it eventually became clear that the beloved dark bassoon sound was in many ways dependent on these deep tone holes.

Almenröder was attracted to Weber's practical approach and began to test these theories on the bassoon. Unlike his French contemporary Jean Nicolas Savary (1786–1853), Almenröder was not a bassoon builder himself but worked with the bassoon builder Carl Friedrich August Jehring, the uncle of one Johann Adam Heckel. Yet a parallel can be drawn with Savary. Both were professional bassoonists who encountered the limitations of the "old" bassoon in the new music of the nineteenth century. And both set out, on different paths, to

adapt the bassoon to the requirements of this new music: Almenräder as the brain behind adaptations carried out by others, Savary as an outstanding builder. The influence of these two bassoonists eventually led to a divergence in the development of the bassoon and paved the way for the further development of the Heckel (now called “German”) bassoon on the one hand and the French bassoon on the other.

Almenräder at B. Schott’s Söhne in Mainz

After serving as an army bandleader in 1817, Almenräder started his new job as a principal bassoonist at the theater orchestra in Mainz where Gottfried Weber was also employed.¹⁴ It was during this time that Weber introduced Almenräder to the people at the Mainz publisher and musical instrument factory B. Schott’s Söhne. In this workshop, Almenräder was able to apply and test Weber’s ideas.

In 1822, Almenräder was appointed principal bassoon of the orchestra of the Archduke of Nassau in Biebrich, a place name now familiar to many bassoonists as the home of the firm Wilhelm Heckel, GmbH. He would remain there for twenty years. In 1823, Schott published Almenräder’s *Abhandlung über die Verbesserung des Fagotts*. In this publication, Almenräder praises the renowned bassoon builders August and Heinrich Grenser and speaks highly of the beautiful round sound of their instruments but adds that their instruments nevertheless suffer from intonation problems. According to Almenräder, the defective tuning of these bassoons forced players to use complicated fingerings, and despite careful fingering choices, tonalities with many sharps and flats still posed problems and could cause bassoonists great embarrassment.¹⁵

Almenräder decided to follow Weber’s proposition by placing the tone holes, where possible, lower in the bassoon’s bore and enlarging them. The tone holes starting from the A tone hole—the sixth hole at the front of the bassoon—and including the E and C tone holes at the instrument’s back, were enlarged and fitted with keys.

Almenräder also introduced a groundbreaking new idea. He decided not only to enlarge the sixth hole and the holes under the B \flat and G \sharp key-covers but also to split them into two holes: one leading to the narrow down bore and one leading to the wide up bore. Almenräder determined that the problematic tuning of the B \flat_2 /B \flat_3 , A $_2$ /A $_3$, and G \sharp_2 /G \sharp_3 octaves was caused by interference from the bass joint and the bell. The extended double bore unique to the bassoon caused these octaves to be too wide on most eighteenth-century bassoons. Through experimentation, Almenräder discovered that by removing the bass joint from the boot and then playing the octaves B \flat_2 /B \flat_3 , A $_2$ /A $_3$, and G \sharp_2 /G \sharp_3 with half a bassoon, the tuning problem was solved and the octaves were in tune.¹⁶ This led him to come up with

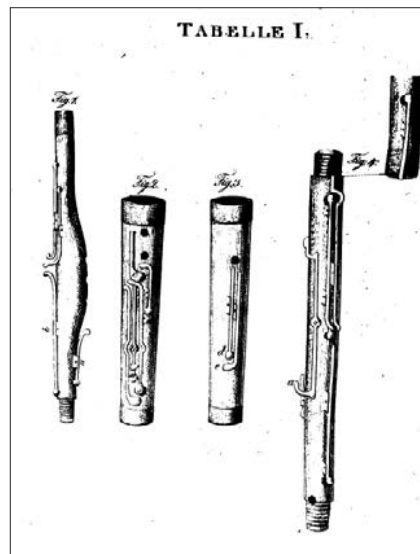


Figure 4. The improved bassoon according to Almenräder.¹³

the idea of drilling an extra hole for these notes towards the up bore to create extra space there and thus reduce the distorting influence of the bass joint and bell. He described this experiment in detail in an article published in *Cäcilia* in 1837: *Bemerkungen über Blasinstrumente mit Tonlöchern; insbesondere die Doppellöcher am Fagott* (Comments on wind instruments with tone holes; especially the double holes on the bassoon).¹⁷

Figure 6 shows that for the B \flat , holes 1 and 2 meet under a key cover, but lead to 3 and 4 in the down and up bore. A $_2$ /A $_3$ is formed by holes 5 and 6 under a key cover, which lead into both bores at points 7 and 8. The octave G \sharp_2 /G \sharp_3 is produced by holes 9 and 10 that lead to the points 11 and 12. Thus, the location where the holes enter the bore differs substantially from where the holes are positioned on the outside of the bassoon for the purpose of placing them under the same key cover.

Further changes made by Almenräder include:

- Moving the key for C \sharp_3 and C \sharp_4 to the left thumb.
- Adding a second key for the G \sharp for the right thumb to facilitate slurring between F \sharp and G \sharp .
- Adding keys for low B and C \sharp .
- Introducing new, better sealing key pads made of wool covered by leather with a tiny ball of animal skin at its center.¹⁹

As a *pièce de résistance* in what would be the year of his death, Almenräder published with Schott his comprehensive German- and French-language bassoon method *Die Kunst des Fagottblasens*, a complete method in the style of the Paris conservatory, including a fingering chart for his fully chromatic eighteen-keyed bassoon.

Benefitting from Almenräder's work, Schott's Söhne received a commendation in 1836 for its excellent Almenräder-designed bassoons. Even so, the firm closed shop around 1840.²⁰

Almenräder u. Heckel

In 1829, the bassoon maker Jehring invited his cousin Johann Adam Heckel to join Schott. Probably due to health reasons, Jehring resigned a year later and started his own business.²¹ Heckel was then seventeen and Almenräder forty-three.²² In 1831, Almenräder and Heckel



Figure 5. *Cäcilia* no.19, 1837, 77.

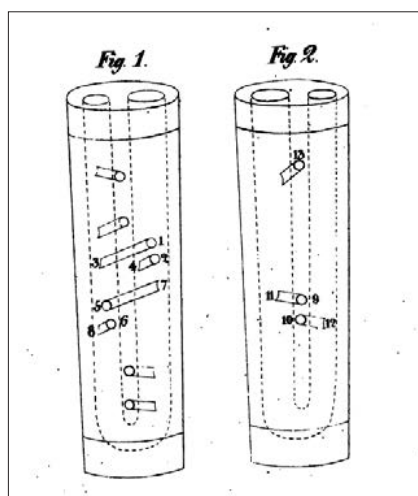


Figure 6. Illustration of the boot in which the double holes are depicted.¹⁸

decided to form a partnership separate from Schott under the name Almenräder u. Heckel. Almenräder, however, remained involved in Schott's activities as a reed builder and proof-reader.²³ Within a few years the relationship between Almenräder and Heckel frayed, and an 1838 letter reveals that Almenräder refused to tune any more Heckel bassoons. Heckel then decided to have the voicing done by others, and this marked the end of the collaboration that had lasted from 1829 to 1838.²⁴

The assumption that the Almenräder-Heckel bassoon was an immediate success proves incorrect. Many regions in Europe preferred the French bassoon, developed by the aforementioned Savary and later by Buffet Crampon and others. In England, the Heckel bassoon did not gain a foothold until around 1930, and in Spain and Italy only after World War II.²⁵ Initially, there was considerable criticism of the Almenräder bassoon due to its high price and the complexity of its key system. Around 1830, most bassoons found in Germany still had around ten keys. Wilhelm Schneider wrote in 1834, "today bassoons are built with even more keys, but because of their high price they are not, and never will be, commonplace."²⁶

Almenräder's modifications also had a great influence on the sound of the instrument. Enlarging the holes and placing keys to avoid forked fingerings made the bassoon's sound much more direct. Even Johann Adam Heckel's son, Wilhelm Heckel, wrote noting that "the shrill, open sound of the new bassoon, despite its powerful sonority, was no competition for the tender, soft sound of the old bassoon." He added that this defect could be remedied somewhat by making a soft-sounding reed.²⁷

In 1877, the same Wilhelm Heckel was able to modify the design and bore of the bassoon in such a way that the earlier shortcomings were negated. His 3000 series marked the beginning of the worldwide popularity of the Heckel bassoon. For a long time after the breakup of Almenräder and Johann Adam Heckel in 1838, Wilhelm Heckel continued to call his bassoons Almenräder-Heckel bassoons. It was not until 1899 that the name Almenräder was omitted for the first time and the instrument was marketed as the "Heckelfagott."

To Conclude

It has become apparent that Almenräder's role in developing the modern bassoon cannot be underestimated. Almenräder was a bassoonist who grew up in the late eighteenth century, using as his instrument a bassoon intended for the repertoire of Haydn, Mozart, and the young Beethoven. He was a bassoonist who experienced the limitations of his instrument at a time when evenness of tone was becoming much more important and orchestras were growing to sizes that placed greater dynamic demands on the instruments and their players.

Almenräder decided to deviate from a centuries-old tradition in which wind instrument builders had placed fingers on the tone holes as long as it was physically possible. Initially, the first bassoons in the seventeenth century had three to four keys. In the second half of the eighteenth century, keys were added sparingly to stabilize notes and expand the high register range.

In the second quarter of the nineteenth century, Almenräder introduced a key system in which the fingers no longer necessarily had to be placed on the tone holes. According to him, as much as possible, a tone hole should be placed in the acoustically correct position in the bore. The accessibility of the finger could be regulated with keys, coupled together, if

necessary, so that several could be operated with one finger. And as explored earlier, tone holes were split into several holes captured under one key cover. However, the consequence of all these adaptations was that the sound of the bassoon was much changed compared to the old instruments. This was not always appreciated by Almenröder's contemporaries.

The assumption that Almenröder based his adjustments on scientifically obtained, acoustic laws rather than the traditional father-to-son transmitted trial-and-error knowledge is not accurate. There was much trial-and-error in his work. However, it is true that interest in acoustics was growing and that Chladni's discoveries were followed with interest, including by Weber and Almenröder. However, Gottfried Weber's theories on the acoustics of wind instruments were limited mainly to the realization that the size of tone holes should ideally be proportional to the diameter of the bore. If this meant that the player could no longer reach them with his fingers, keys could solve this problem. This line of thought was the basis of the adjustments made by Almenröder.

After the breakup between Almenröder and Heckel in 1838, the Heckel firm did not sit still. They added a B \flat key for the right thumb, the whisper key on the crook, and the caoutchouc lining in the bore, to name but a few modifications. But there is no denying that it was Carl Almenröder who laid the foundation for the present German bassoon that is loved by so many today.



Wouter Verschuren specializes in the performance and research of music from the 16th and 17th century through music of the romantic era, as well as contemporary music written for historical bassoon. He makes regular appearances in Europe, North and South America and Asia. Wouter is principal bassoonist of The Amsterdam Baroque Orchestra conducted by Ton Koopman and is co-founder of Concerto della Borde and The Caecilia-Concert. Wouter can be heard on countless orchestral and chamber music CDs on labels such as Globe, Sony,

Alpha, Erato and Antoine Marchand. He participated in the recording of the complete Bach and Buxtehude Cantatas with The Amsterdam Baroque Orchestra. Besides his positions at the Royal College of Music in London, The Royal Conservatoire in The Hague and The Utrecht Conservatoire, Wouter regularly gives master classes in Europe, the USA and the Middle East. Wouter is also active as a researcher, with the primary aim to rediscover forgotten repertoire for dulcian and (historical) bassoon.

Endnotes

- 1 “Nekrolog Carl Almenräder,” in *Cäcilia, Eine Zeitschrift Für Die Musikalische Welt, Herausgegeben von Einem Vereine von Gelehrten, Kunstverständigen Und Künstlern!*, vol. 23 (Mainz: B. Schott’s Söhne, 1844).
- 2 Julia Rosemeyer, “Carl Almenräder (1786–1843): Untersuchungen zu Leben und Schaffen” (Mainz, 2002), 323.
- 3 Janna Saslaw, “Weber, (Jacob) Gottfried” *Grove Music Online* 2001; Accessed 19 Sep. 2021. <https://www-oxfordmusiconline-com.access-authkb.kb.nl/grovemusic/view/10.1093/gmo/9781561592630.001.0001/omo-9781561592630-e-0000029983>.
- 4 1798-1848. 1863-1882.
- 5 “Verbesserung d. Flöte”(AmZ Band 13, 1811) ,“Wesentl. Verbesserung des Horns” (AmZ Band 14,1812), “Üb. Generalbassspielen bey Kirchenmusik u. bessere Anwendung der Orgel dabey”(AmZ Band 15, 1813), “Verbesserung der Pauken”(AmZ Band 15, 1813), “Erlernung des Trillers bey Singen”(AmZ Band 18, 1816).
- 6 H.-J. Stöckmann, “Chladni Meets Napoleon,” *The European Physical Journal Special Topics* 145, no. 1 (2007): 15–23.
- 7 William Henry Stone, *Elementary Lessons on Sound* (London: Macmillan and Co., 1879), 26.
- 8 Stöckmann, “Chladni Meets Napoleon,” 87.
- 9 AmZ 1816 no.4 Januari, 67.
- 10 Ibid, 89.
- 11 Ibid, 72.
- 12 James B. Kopp, *The Bassoon* (Yale University Press, 2012), 115.
- 13 Charles Almenräder, *Abhandlung Über Die Verbesserung Des Fagotts/Traité Sur Le Perfectionnement Du Basson* (Mainz: Schott & Söhne, 1824).
- 14 Rosemeyer, “Carl Almenräder,” 328.
- 15 Ibid., 1.
- 16 The author has not been able to successfully replicate this experiment. However, he does note that the bass pipe has great influence on the tuning of the entire instrument.
- 17 Carl Almenräder, “Bermerkungen Über Blasinstrumente Mit Tonlöchern; Insbesondere Die Doppellöcher Am Fagott,” in *Cäcilia*, vol. 19, 1837, 77–87.
- 18 Almenräder, *Abhandlung Über Die Verbesserung Des Fagotts*, 1.
- 19 Ibid.
- 20 Kopp, *The Bassoon*, 118.
- 21 Ibid.
- 22 Charles Koster, “A Translation of: Treatise on the Improvement of the Bassoon Including Two Tables by Carl Almenrader,” *The Double Reed*, 14 (1986): 22–39, 22.
- 23 Ibid.
- 24 Kopp, *The Bassoon*, 118.
- 25 Sebastian Werr, “Who Actually Played the Almenräder Bassoon? Remarks on the Spread of ‘Evolutionary Bassoons’ in German-Speaking Countries during the Middle of the Nineteenth Century,” in *Celebrating Double Reeds: A Festschrift for William Waterhouse and Philip Bate*, 2009, 169.
- 26 Ibid.
- 27 Wilhelm Heckel, *Das Fagott kurzgefaßte Abhandlung über seine Entwicklung, seinen Bau und seine Spielweise* (Biebrich a. Rhein: Heckel, 1899), 11.