Bernhard Richter / Wolfgang Holzgreve /
Claudia Spahn (ed.)

Ludwig van Beethoven: the Heard and the Unhearing

A Medical-Musical-Historical Journey through Time

HERDER

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Translated by
Andrew Horsfield

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Words of welcome from Nike Wagner

Bonn is not only the birthplace of Beethoven. The composer spent the first two decades of his life here, became a professional musician in this city and absorbed here the impulses and ideas of the Enlightenment that shaped his later creative output, too.

To this extent, it is logical that Bonn is preparing to celebrate Beethoven with a kind of "Cultural Capital Year" to mark his 250th birthday. In this special year, opportunities have been created in abundance to engage with the "great mogul," as Haydn called him. There is still more to be discovered in his music, as in his life, too. In this sense, a symposium that approaches the phenomenon of Beethoven from the music-medicine perspective represents an additional and necessary enrichment of the anniversary year.

When I began my tenure as artistic director of the Beethovenfeste Bonn in 2014, I set out to bring forth something that was always new, special and interdisciplinary. Not only in works of the classical repertoire, but also references that intersect history and the present. For example, in 2019, the anniversary year of the moon landing, we had a festival motto that permitted references to the scientific-technical side, as well as to the romantic aspects: "moonlight."

It is not only Beethoven's music that is embedded in our cultural awareness, but his tragic fate, too. Around the age of thirty, the musician gradually started to go deaf. In a survey of over two thousand adults conducted in December 2019 by the opinion research institute YouGov, Beethoven's deafness was still known about by nearly two thirds of those polled. Accordingly, I also once chose the concept of "fate" as the motto for a Beethoven festival—a term that can certainly be examined from a medical and psychological perspective, as well.

In my view, the loss of his hearing did not affect his compositional creations, however. Beethoven would always have be-

come what he was. The assumption is, however—and this applies to the late work, above all—that he revealed a radicalization of his musical language that, had he not gone deaf, might perhaps not have been granted to him in that way. That this highly gifted pianist had to stop playing the piano and conducting impacted negatively his existence as a musician, with drastic social effects for him.

In the program of the symposium "Beethoven—Heard and Unhearing" there are a range of references to the Beethovenfest 2020. We orbit around the theme of "Beethoven and Europe" on the one hand, and allow Beethoven as vocal composer to make his voice heard, on the other. In March and September 2020, the Ninth Symphony with its famous chorus in the fourth movement can be heard, and the "Missa solemnis" is planned for August, alongside the opera "Fidelio."

The March festival 2020 unfortunately had to be canceled due to the Covid-19 pandemic. But we hope that our autumn season—from September 4 to 27—will not have to fall victim to the virus. The motto chosen for this autumn festival quotes a Klopstock verse as follows: "Resurrect, indeed resurrect." If it should be able to take place, this title would be given an unexpectedly current perspective, fitting to the end of the present Corona virus we all so desire.

Nike Wagner, Artistic Director of the Bonn Beethovenfest

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Chapter 1

Introduction and overview

Bernhard Richter / Claudia Spahn / Wolfgang Holzgreve

The year 2020 marks a special anniversary in our engagement with Ludwig van Beethoven, for in this year his birthday occurred exactly 250 years ago. The round number offers the occasion and reason to address his personality and life in a specific overview from various disciplines. The present volume paints a portrait in various contributions of the composer, in which music-medical perspectives on Beethoven are investigated and categorized in their historic dimension. It brings together the lectures from a symposium of the same title as documentation, which has been sponsored by the Beethoven Anniversary Society BTHVN. The intention in the following is to introduce readers to and give an overview of the various contents making up the present volume.

Beethoven – heard and unhearing

A large part of Beethoven's works, the symphonies as much as his solo piano works, his chamber music as much as his opera Fidelio, have from their first performance imprinted themselves firmly onto human cultural memory. A living expression of this experienced musical reception are the continuously high number of CD sales of Beethoven's works and the retrievals from such typical streaming services as Spotify, for example. Borrowing from Schiller's formulation in "Ode to Joy," one could almost speak of "all people" having experienced Beethoven auditorily.

People around the globe were and are directly spoken to and deeply moved by Beethoven's music. The "emotional depth" of

his works covers the whole spectrum from "nameless joy" in Fidelio to "profound mourning" in the Marcia funebre of the Eroica. Eleonore Büning formulates it as follows in her book "Sprechen wir über Beethoven – Ein Musikverführer" published in the anniversary year 2020: "The music of Ludwig van Beethoven already shocked, disturbed, [and] divided the public during his lifetime."[1]

Beethoven has developed an immense influence beyond his existence as a musician. In the opinion of the conductor Kent Nagano, "Beethoven is probably the one composer of the classics whose music shows the greatest influence on the history of our time and ideas." Some authors even see in him the "creator" of a unique "universe," such as Martin Geck (1936–2019) in the sub-title of his monography "Beethoven" in 2017, who ascribes him a sort of "god-like" status.[2] Beethoven is regarded as a revolutionary and visionary, as a pioneer for the freedom of the single, artistically active individual, indeed of all humanity, very much in the spirit of the Schiller lines: "Be embraced ye millions yonder, Take this kiss throughout the world!"

In summary, we can therefore justifiably claim: Beethoven was and is a man "heard."

Almost as well-known as his music is the fact, too, that Beethoven increasingly lost his hearing half-way through his life and that he created part of his works that are today regarded as important—the 9th Symphony and the Missa Solemnis, among others—as a virtually entirely deaf musician. The admiration for this particular reality in Beethoven's life was and remains unchanging. Victor Hugo (1802–1885) already described Beethoven fittingly as follows: "*Ce sourd entendait l'infini …* / This deaf man heard infinity."[3]

Beethoven unites therefore in the second half of his life two contradictory characteristics: he was – and still is – a much-heard and greatly appreciated composer, while he himself was unable to hear.

Personal statements and literature on Beethoven

There are numerous personal statements by Beethoven in his extensive correspondence,[4] in the conversation notebooks[5] and the sketch books,[6] as well as other fragmentary diary entries.[7]

Moreover, a large number of reports by contemporaries who themselves met Beethoven exist:

pars pro toto the report that appeared in 1874 by the doctor Gerhard von Breuning (1813–1892) titled "From the Schwarzspanier House. Memories of L. v. Beethoven from my youth" can be mentioned.[8] In retrospect, it is difficult to check the veracity of the most varied people's memories of Beethoven—and the anecdotes about him.

The secondary literature about Beethoven is overflowing and fills every meter of bookshelf in every music library. In the following, it cannot be even be rudimentarily acknowledged. The texts about his music that have arisen since the first extensive reviews—for example, E. T. A. Hoffmann's (1776–1822) impressive discussion of the 5th Symphony in the Allgemeine Musikalische Zeitung on July 4, 1810[9]—are almost innumerable. Texts that approach Beethoven as a human being are hard to comprehend, too—just as Richard Wagner (1813–1883) expressed it in his thoughts on the centenary of Beethoven's birth in 1870: "I believe that the most certain thing that we can learn about the man Beethoven will be in the best case the same relationship as between General Bonaparte and the 'Eroica Symphony'."[10]

The first "Biographischen Notizen über Ludwig van Beethoven" (Biographical Notes on Ludwig Beethoven) were published in 1838 by his friend from Bonn, Franz Gerhard Wegeler (1765–1848).[11] He had written them together with Beethoven's longtime pupil and confidante, Ferdinand Ries (1784–1838), who died before the book came out, however. This depiction was followed by another work from Beethoven's immediate circle, the "Biographie von Ludwig van Beethoven" (Biography of Ludwig van Beethoven) by Beethoven's "loyal" assistant Anton Schindler (1795–1864) penned in 1840.[12] Due to numerous inconsistencies in this depiction, Alexander Wheelock Thayers

(1817–1897) attempted, under the title "Ludwig van Beethoven's Life," an examination of the known sources that was to be as scientifically well-founded as possible. This was finally published from 1866 through 1908—with the key cooperation of Hermann Deiters and Hugo Riemann—as a five-volume biography.[13] After this comprehensive portrayal—which for its part contained a number of unproven assumptions—further significant publications were written at regular intervals up to the present day, which time and again have re-engaged with the life and work of Beethoven.

Interest in Beethoven's medical history was and is great, too. A first-hand report comes from Andreas Ignatz Wawruch (1773–1842), who personally treated Beethoven in the months of his final illness. In 1842, he published an "Ärztlichen Rückblick auf Beethovens letzte Lebensepoche" (Medical Review of Beethoven's Last Period of Life) in the "Wiener Zeitschrift für Kunst, Literatur, Theater und Mode."[14] Since this publication, in every following generation medical colleagues engaged with Beethoven as a patient from a range of perspectives. This led on the one hand to monographies such as "Beethovens Krankheiten und ihre Beurteilung" (Beethoven's Diseases and their Assessment) by Walther Forster[15] or "Die Krankheiten Ludwig van Beethovens. Pathographie seines Lebens und Pathologie seiner Leiden" (The Diseases of Ludwig van Beethoven. Pathography of his Life and Pathography of his Suffering) by Hans Jesserer and Hans Bankl.[16] On the other hand, Beethoven with his illnesses is a central component of several compilations that deal with the diseases of different composers, such as "Kerners *Krankheiten* großer *Musiker" (Kerner's Diseases of Great Musicians)*,[17] for example, "Die Krankheiten großer Komponisten" (The Diseases of Great Composers) by Franz Hermann Franken[18] or "Berühmte Komponisten im Spiegel der Medizin" (Famous Composers in the Mirror of Medicine) by Anton Neumayr.[19] They are given consideration in the various chapters of the present book dealing with Beethoven's illnesses.

To mark the anniversary year 2020, a veritable flood of Beethoven-related publications is recorded, including decidedly entertaining ones such as the book "Der Ludwig, jetzt mal so

gesehen: Beethoven im Alltag" (Ludwig seen like this for once: Beethoven in everyday life) penned by the cabaret artist Konrad Beikircher.[20]

Overview of the contributions in the documentation

In the present volume, from a music-medical angle, the approach intended is that both aspects—namely, Beethoven's music and his illness(es)—should serve equally as starting points for a consideration of the phenomenon Beethoven from both a historical and history of reception perspective. The contributions herein can be assigned to four broad themes:

1. Beethoven—from a music-medical perspective
2. Beethoven—focus on hearing
3. Beethoven—politically and cosmopolitically
4. Beethoven—his vocal compositions from the perspective of vocal science and singers' medicine

In conceiving these four broad themes and the corresponding contributions, we as the editors have let ourselves be inspired by the five main themes of the Beethoven Anniversary Society BTHVN that accompany the centenary year of 2020: Beethoven as the world citizen from Bonn; Beethoven as musician; Beethoven as humanist; Beethoven as visionary; Beethoven as nature enthusiast. The following thematic areas are in each case associated with one or the other of these main themes. It is part of the concept that the authors come from very different fields, thus enabling a range of approaches to the life and work of Beethoven (see List of Contributors p. 219 ff.). In this, the constant "ability to take the broader view" beyond the narrow boundaries of specialisms was deliberately chosen, as, in the editors' view, a phenomenon as all-encompassing as Beethoven can only be meaningfully addressed with an inter- and transdisciplinary approach. The high expertise of the authors in their special disciplines—more detailed information on which can be found in the curriculum vitae at the end of this volume—enable

readers to become acquainted with different branches of scholarship in their consideration of Beethoven.

1. Beethoven – from a music-medical perspective

Of interest from a music-medical point of view is how medical care was provided in Vienna in the 18th and 19th century. In the context of this question, hygienic conditions play an important role in Beethoven's day, as well. Moreover, we need to ask how other prominent composers in Vienna (Mozart) and other deaf persons in the 19th century (Smetana) fared. These aspects are covered by Bernhard Richter and Claudia Spahn, heads of the Freiburg Institute for Music Medicine in the article titled **Beethoven et al.: – medical-historical aspects** (**Chapter 2, p. 27**).

This contribution is connected in turn with the main theme of "Beethoven as musician", yet also with the theme "Beethoven as nature enthusiast", as Beethoven, due to his progressive loss of hearing, could not only no longer listen to his own compositions, his access to nature as an auditory experience was increasingly blocked. For example, he could no longer hear a shepherd's flute on walk, and natural conversation with his fellow beings became increasingly difficult and eventually impossible.

Beethoven was born in and shaped by Bonn: as the child prodigy in a household filled with alcoholics, a disease which was also presumably the cause of Beethoven's own death in 1827, too. In Bonn arose the friendship with the doctor Franz Gerhard Wegeler, a bond that was to be maintained throughout his life; a separate chapter titled **Beethoven's friendship with the Bonn doctor Prof. Wegeler** (**Chapter 3, p. 48**) is devoted to this subject. The author of this chapter, Norbert Flörken, wrote this in close collaboration with the Beethoven-Haus Bonn and the Julius-Wegelerschen Family foundation. Felix Julius Wegeler, who will present this essay together with Malte Boecker, the head of Beethoven House in Bonn—in which his memory is intensively preserved true to the main theme of *Beethoven as a citizen of Bonn (and the world)*—is himself a direct descendant of Franz

Gerhard Wegeler. The friendship between Wegeler and Beethoven, which had already begun to develop since Beethoven was 12 years old, was kept up by correspondence, as the friends were unable to meet face-to-face for more than 30 years until Beethoven's passing, due to the great distance between them. In these letters—the last was written by Beethoven to Wegeler on February 17, 1827, i.e. just a few weeks before his death—Beethoven reports right up to the last and very openly from Vienna to his friend in Bonn about his disease symptoms—both in terms of his general state and also his deafness. These written documents are one of the essential sources to help us understand the man Beethoven and the way he handled his illnesses.

For a comprehensive music-medical approach—one could speak of an integrated treatment—the effects of Beethoven's illnesses on his psychological well-being and his social life are of vital interest. The term "illness" is understood here not only in terms of symptoms, but also as a life-long process in the sense of the bio-psycho-social model, i.e. alongside the otological perspective, the mental aspects are included, as well as the internal illnesses.

The fact that—and the way in which—Beethoven himself profoundly perceived the psycho-social aspects of his gradual loss of hearing can already be understood in his Heiligenstadt Testament of 1802. Because of its central importance for our understanding today of Beethoven as a person, a separate chapter will be devoted to this range of themes from a psychosomatic angle, titled **Beethoven: Psycho-social aspects and resilience** (**Chapter 4, p. 65**), by Claudia Spahn. Moreover, the symptoms in the gastro-intestinal tract that accompanied Beethoven throughout his adult life and which frequently prevented him from working greatly influenced his well-being. As a result, it seems interesting to ask whether and how these frequent complaints had an effect on his musical work. This theme is addressed by the Director of the Medizinische Klinik und Poliklinik I at Bonn University Clinic, Christian Strassburg, in his contribution **Beethoven: Effects of internal diseases on his compositions** (**Chapter 5, p. 77**)

2. Beethoven – Focus on Hearing

From Beethoven's extensive "disease files," the question of his hearing disorder stands out. The possible causes for the loss of hearing discussed in specialist medical literature range from infectious diseases, including venereal infections, mental causes, a generalized arteriosclerosis, through to poisoning and constitutional disorders such as otosclerosis and Paget's Disease. We should bear in mind that during Beethoven's lifetime there was no ontological science and no audiological research, and so there is lack of any kind of medical assessment from Beethoven's time that is even halfway useful to us. This is especially so given that no histological examination of the petrous bones exists, as already noted by the Viennese otologist Heinrich von Neumann (1873–1939) in 1927 in a contribution to the centenary of Beethoven's date of death.[21] With regard to Beethoven's hearing loss, the focus in this book is therefore not exclusively on finding out the cause of his deafness, although the most likely differential diagnoses from a modern-day perspective are discussed. A clear diagnosis can no longer be ascertained due to the absence etiologically of a definite cause based on the facts. In contrast, the focus is shifted to ways in which we can understand Beethoven's way of dealing with his deafness and how this impacted different areas of his life. We continue to be astounded by the phenomenon of a deaf person being able to compose in an unhindered way, so to say, fully in command of his musical creativity. In addition, it seems interesting to place Beethoven's situation as a deaf patient in the medical context of his time and to ask: what was known at the time Beethoven lived of the physiology and pathophysiology of hearing and how, by contrast, is our knowledge of the same today? These questions are taken up by the sound researcher and inner ear physiologist Tobias Moser from Göttingen in his essay **Beethoven: How does hearing work? The physiology of hearing (Chapter 6, p. 97).**

Starting from the basic knowledge of physiology of that time, it is furthermore pertinent to ask what the diagnostic possibilities for clarifying a hearing disorder were in the period Beethoven was alive and how one would proceed today. This aspect is

examined by Götz Schade, head of the Department of Phoniatrics and Pediatric Audiology at Bonn University Clinic, in the chapter **Beethoven: Could we find out today why he went deaf? Diagnostics of deafness** (**Chapter 7, p. 106**).

In a historic journey through time from Beethoven's era to our own, the possibilities of treatment with a hearing aid are described by the hearing aid acoustician Werner Köttgen in the chapter **History of hearing aids: From the ear trumpet to digital multi-channel technology** (**Chapter 8, p. 115**).

In conclusion, in the complex of themes around Beethoven and hearing, we examine in detail what possibilities there would be today to treat Beethoven's impaired hearing. The aspects concerning medical treatment—taking into account the most frequently named differential diagnoses—are presented by Friedrich Bootz, director of Bonn University ENT Clinic, in the contribution titled **Beethoven's deafness: Could he be treated today? Therapeutic options for his hearing impairment** (**Chapter 9, p. 134**).

The contributions to the complex of themes around hearing disorders are connected with the main theme of "*Beethoven as musician.*"

3. Beethoven—politically and cosmopolitically

Beethoven lived in an era of transition from the feudal systems of estates to the formation of a liberal shaped by the bourgeoisie, in which all people are entitled to equal rights. As a young person he was already fascinated by the French Revolution and later on by Napoleon, to whom he initially wished to dedicate his 3rd Symphony, the Eroica. While he cultivated contacts with the Viennese aristocracy—for example, his patrons included Prince Franz Joseph Maximilian von Lobkowitz (1772–1816), the Russian envoy Count André Razumovsky (1752–1836) or Count Moritz Fries (1777–1826), while Archduke Rudolf of Austria (1788–1831) was his piano student—nonetheless, he criticized Johann Wolfgang von Goethe (1749–1832) for being insufficiently self-confident towards the nobility. After meeting Goethe in Treplitz in 1812, Beethoven wrote: "The court atmo-

sphere pleases Goethe too much, more than befits a poet."[22] He is reputed to have said to an aristocratic patron, Prince Karl von Lichnowsky (1761–1814): "Prince! What you are is due to chance and birth. What I am, is due to me, princes come in their thousands, but there is only one Beethoven."[23] Concerning the image that exists today of Beethoven as a rebel and free spirit, it should be asked as to whether and to what extent these behavioral patterns were shaped by the hearing disorder. In the 20th century, he has in any case attained additional significance in world politics posthumously by his 9th Symphony being selected as the European hymn by the European Council in 1972—in an instrumental arrangement by Herbert von Karajan (1908–1989). In her contribution **The political Beethoven** (**Chapter 10, p. 149**), Eleonore Büning examines this important range of themes. It links up with the main theme of "*Beethoven as humanist.*"

Beethoven is for sure the best-known resident of Bonn to have moved from his home city to Vienna, to one of Europe's most important music centers of his time. Moreover, Beethoven also made several plans to travel to London and Paris, similar to his role models Mozart and Haydn, but unfortunately his generally unstable state of health did not permit such trips. But by moving to Vienna, it was not just as a person that he went out into "the big, wide world"; rather his music, in particular, rapidly resonated throughout the world that was known at the time—in Paris, London and quickly overseas, too. In this process, Beethoven's global impact has gone beyond any horizon. Thus, in Japan he has become exceedingly popular since the first performance of his 9th Symphony in 1918. Since that time, the tradition has developed of performing Beethoven's "daiku," the great 9th Symphony, around the turn of the year with amateur choruses, in which thousands of singers stage the final chorus in great sports arenas, together with an orchestra. How his music has spread in the USA since the early 19th century and how it was reworked there creatively is the subject of the contribution titled **"The best product that human beings can boast of" – Beethoven in the USA** (**Chapter 11, p. 162**) by Gregor Herzfeld, musicologist teaching at the University of Vienna.

It could be said that Beethoven was already a "superstar" during his lifetime, who literally enthused the masses, as Kent Nagano describes it in his book "Expect the Unexpected."[24] A final expression of this massive popularity was his funeral procession, in which 20,000 people are said to have taken part—this was therefore some 5 % of Vienna's population, as around 400,000 persons lived in Vienna in 1830 according to the Austrian Statistics Office.[25] Thus, one could describe Beethoven as a "popstar" *avant la lettre*, too. Given his attraction to larger groups of people, it should also not surprise us that his music had an impact on various genres of pop culture in the 20th century. It is to this important aspect of modern-day Beethoven reception that the musicologist Michael Custodis, lecturer at the University of Münster, devotes himself in his contribution **Ode for Elise in the moonlight. Pop meets Beethoven** (**Chapter 12, p. 172**).

These three contributions in turn are to be categorized under the main themes of "*Beethoven as the world citizen from Bonn*" and "*Beethoven as visionary*".

4. Beethoven—his vocal compositions from the perspective of vocal science and singers' medicine

Treatment of the singer's voice in Beethoven's oeuvre represents the fourth major thematic complex that is relevant from the perspective of both vocal science and singers' medicine. Beethoven wrote many works for the voice (songs, operas and choral works), which are felt to be hard to perform by modern-day singers, however. The tessitura seems unpleasant, the lyrical song develops towards a more dramatic vocalization and the vocal line has to assert itself in the face of an increasingly loud accompanying instrument or instruments. Three texts are dedicated to this theme that is important from the music medicine viewpoint:

Beethoven—Song setting and audio-lingual skills from a musicological and medical perspective (**Chapter 13, p. 185**) by the musicologist and singer Thomas Seedorf from the University of Music

Karlsruhe and the phoniatrist/audiologist and singer Dirk Mürbe, Director of the Clinic for Audiology and Phoniatrics at the Charité Berlin; **Beethoven: Transition from the lyrical to the dramatic song** (**Chapter 14, p. 201**) by the phoniatrist/audiologist and singer Matthias Echternach, Head of the Department of Phoniatrics and Audiology at the LMU München; **Beethoven's choral works – Peak vocal performance using the example of the Missa solemnis** (**Chapter 15, p. 211**) by the singer and conductor René Jacobs from Paris.

These contributions apply to the main theme of "*Beethoven as musician.*"

Through this interdisciplinary approach, the editors and authors of the present book hope to broaden the view of the phenomenon that is Beethoven and to enrich and further differentiate the picture of the composer by means of added tones and nuances.

Adnotations

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Beethoven –
from a music-medical perspective

Chapter 2

Beethoven et al. – medical-historical aspects

Bernhard Richter / Claudia Spahn

Introduction

Beethoven did not generally feel well treated by the doctors of his time, as he described in detail in letters to his boyhood friend from Bonn, the doctor Dr. Franz Gerhard Wegeler (1765–1848).[1] One of his doctors, whom he does not name more specifically, was even dubbed a "medical Asinus" by him in a letter to Wegeler dated June 29, 1801. In the Heiligenstadt Testament he writes in 1802: "[…] but, think that for six years now I have been hopelessly afflicted, made worse by senseless physicians, from year to year deceived with hopes of improvement, finally compelled to face the prospect of a lasting malady (whose cure will take years or, perhaps, be impossible) […]."[2] Beethoven thus matched the spirit of the time, according to which patients hoped for miracle cures from doctors, without the latter having the necessary knowledge. This image of the doctor was prominently thematized by Johann Wolfgang von Goethe (1749–1832) in his tragedy "Faust" published in 1808. Beethoven met Goethe personally in 1812 and held his works in high regard. Commissioned by the Burgtheater, Beethoven wrote the incidental music for Goethe's "Egmont," which was premiered as Op. 84 on June 15, 1810.[3] Moreover, he set several of his poems to music, including the song with piano accompaniment from 1809 titled "From Goethe's Faust – The Song of the Flea" (Op. 75.3), which is still very well-known today.

In "Faust", Goethe reflects the child-like naivety of the patients in the healing function of doctors, who for their part were fully aware of their own powerlessness, however. He describes how Doctor Faust, accompanied by his student Wager on their Easter walk, are met with veneration and great respect from the

people because of the medical treatments that he and his father have carried out. Faust finds this praise to be highly unwarranted, as no successful treatments have been recorded; rather, damage was done due to the treatments. Faust reaches the bitter conclusion: "The crowd's applause has now a scornful tone./ O couldst thou hear my conscience tell its story,/ How little either sire or son/ Has done to merit such a glory/ ! […]/ Here was the physic,/ death the patients' sufferings ended,/ And no one asked, who then was healed?/ Thus, with electuaries so satanic,/ Worse than the plague with all its panic,/ We rioted through hill and vale;/ Myself, with my own hands,/ the drug to thousands giving,/ They passed away, and I am living/ To hear men's thanks the murderers hail!"[4]

Main questions

If one approaches the set of themes "Ludwig van Beethoven as patient" from a history of medicine perspective, it is worth taking a closer look at the different circumstances of his treatment. The following aspects seem important for this:

1. What was the general level of medical knowledge during Beethoven's lifetime?
2. Which doctors did Beethoven draw on for advice and how can their quality be assessed in the context of the existing possibilities during that period?
3. What medical provision and hygienic conditions existed in Vienna in general during Beethoven's lifetime?
4. What similarities to and differences with other composers are revealed in respect of medical diagnostics and treatment?

1. What was the general level of medical knowledge during Beethoven's lifetime?

Medicine in the Vienna of enlightened absolutism

With the Theresian-Josephinian reforms, the Austrian monarch Maria Theresia (1717–1780) pursued ambitious educational

goals in the spirit of an enlightened absolutism. One of the key people shaping these reform efforts, especially in the area of medicine and university education, was the Dutch doctor Gerard van Swieten (1700–1772). He had been educated in Europe in the mid-18th century at the renowned medical faculty in Leiden in the Netherlands. Maria Theresia summoned van Swieten as her personal physician in 1745. He reformed the study of medicine at the University of Vienna—by introducing teaching at the bedside, among other things, a method of conveying knowledge to aspiring doctors that had already been established by his teacher Herman Borhaave (1668–1738) in Leiden. Van Swieten is one of the fathers of the Vienna School of Medicine, which set up the First General Hospital in Vienna in 1784 during the reign of Joseph II (1741–1790), the son of Maria Theresia. The permanence of van Swieten's influence in Vienna can be seen, among other things, in the way he occupies an emphasised position in the canon of figures in the monument erected between the Kunsthistorisches and Naturhistorisches Museum more than 100 years after the death of the Empress Maria Theresia: As a freestanding figure, he represents the field of *science and art* in front of the scientists and artists depicted in the background in front of the old university, namely the numismatist (coin specialist) Joseph Hilarius Eckhel (1737–1798) and the historian György Pray (1723–1801) as well as the composers Christoph Willibald Gluck (1714–1787), Joseph Haydn (1732–1809) and Wolfgang Amadeus Mozart (1756–1791) depicted as a child. Van Swieten's son, the diplomat Gottfried Freiherr van Swieten (1733–1803), was an important patron and catalyst for Mozart, Haydn and Beethoven. He acquainted Mozart with the scores of Handel and the Bach family, for Haydn, he collaborated on the creation of the libretti for the two oratorios "The Creation" and "The Seasons," while Ludwig van Beethoven dedicated his First Symphony, first performed in 1800, to him.

The Vienna School of Medicine during Beethoven's lifetime

When Beethoven was alive, the Vienna School of Medicine was one of the most modern medical schools in Europe, comparable with those in Leiden and Edinburgh. Despite an understanding of science that was strictly bound to the ideals of the Enlightenment, the limited technical possibilities of examination delayed the rapid acquisition of further knowledge at the outset of the 19th century. Examination methods such as the detection of pathogenic germs or X-rays, which we take for granted, were as yet unavailable, making the diagnosis of diseases, and to a degree of precision as we would understand it today, considerably more difficult, with the same holding true for a rational treatment. This can be clearly illustrated by Mozart's medical history. In 1791 he was diagnosed with "hot strophular fever" and died at the age of just 36. This diagnosis does not fit any of the clinical pictures we are familiar with today, so that several generations of medical historians have tried to classify the description in terminology that can be understood now. The hypothesis that is currently most convincing is that Mozart died of terminal kidney failure. Those readers interested in these events in detail are recommended the comprehensive descriptions given by Franz Hermann Franken[5] and Anton Neumayr.[6] The therapy given to Mozart probably consisted—insofar as it can still be ascertained today—of repeated blood-letting, since the attending physicians Dr. Closset (1754–1813) and Dr. Sallaba (1764–1797), as students of the famous Prof. Dr. Maximilian Stoll (1742–1788), for sure employed this method of therapy favoured by their teacher. Stoll started from the idea that a disease-causing matter, the so-called "materia peccans," is formed in the body of a sick person and "settles" in an organ. This was to be removed from the body by the three purifying therapeutic methods of bloodletting, administration of emetics or laxative measures. Stoll had numerous followers throughout Europe, the so-called Stollianer, as Franken explains. Franken assumes that Mozart received at least two or more blood-lettings during the two-week period he was ill leading up to his death. This appears to have exacerbated his state of health even further, as far as we

can tell today. The term "Stollianer" was also used by Beethoven himself towards Braunhofer, as described below, as well as the term "Brownian", which goes back to John Brown (1735–1788) and which, in Vienna—especially through the influence of Frank (see below)—became a widespread doctrine, so-called Brownianism. Brown worked from the premise that irritiation-reducing or increasing therapeutic agents should be used, depending on the lack of or increase in the patient's excitability.

2. Which doctors did Beethoven draw on for advice and how can their quality be assessed in the context of the existing possibilities during that period?

We can trace the symptoms and ailments that befell Beethoven throughout his life from numerous notes he made himself, from the accounts of those around him, and from reports made by the attending physicians. The existing sources have been comprehensively presented in the 20th century by leading medical historians such as Franken, Neumayr and Kerner[7], among others. In the context of this book, they are discussed in chapters 4, 5 and 9 from the viewpoints of psychosomatics, internal medicine and otorhinolaryngology, taking a modern-day perspective.

The doctors who treated Beethoven for his various sufferings are introduced individually by Neumayr in a separate chapter under the heading "Profiles of the attending doctors." They were known at the time as protagonists of the Vienna School of Medicine, such as Prof. Dr. Peter Johann Frank (1745–1821) as Director of the General Hospital, his student Dr. Johann Malfatti (1776–1859) as personal physician to Archduke Karl and his assistant Dr. Andreas Bertolini, Prof. Dr. Johann Adam Schmidt (1759–1809) as professor of personal Pathology and Therapy at the Josephineum Wien, Dr. Gerhard von Vering (1755–1823) as the leading Surgeon Major in Lower Austria, Dr. Jakob Staudenheim (1764–1830) as personal physician to Napoleon Bonaparte's son, Prof. Dr. Anton Georg Braunhofer

(1780–1845) as a sought-after general practitioner in Vienna, as well as Prof. Dr. Andreas Ignatz Wawruch (1773–1842) as Director of the Medical Clinic of Vienna.

All his life Beethoven was very familiar with doctors as he had been a close friend of Franz Gerhard Wegeler from his early days in Bonn, as mentioned at the beginning. Both men continued to cultivate this friendship as adults—even though they could no longer meet face-to-face from the point Wegeler moved from Vienna back to Bonn in 1796, up until Beethoven passed away in 1827 (cf. chap. 3). Wegeler's role as a biographer of Beethoven is also significant, as he wrote, together with Beethoven's pupil Ferdinand Ries (1784–1838), *Biographische Notizen über Ludwig van Beethoven* as a book in 1838, published by Verlag Karl Baedeker.[8]

Despite this close friendship with Wegeler, with whom he time and again corresponded intimately on his state of health —as quoted above several times—Beethoven had an ambivalent relationship with his physicians during his time in Vienna. He was well acquainted with several of the attendant doctors in Vienna and cultivated various social contacts with them. Thus, he made music with them or their immediate family and even made a marriage proposal—to the extent that we can surmise this from the less than clear sources—to Therese Malfatti (1792–1851), a cousin of the doctor, most likely in 1810. He dedicated his works to individual doctors, such as his his Trio Op. 38 E flat major (Grand Trio) for piano, clarinet/violin and cello, with the inscription: "à Monsieur Jean Adam Schmidt, Conseiller de Sa Majesté l'Empereur et Roi, Chirurgien Major de Ses Armés, Professeur public à l'Académie de Medecine et Chirurgie fondée / par feu S. M. l'Empereur Joseph II, Membre de plusieurs Sociétés savantes &&," which appeared in 1807. For Malfatti, in June 1814, he composed a cantata for soprano, two tenors and bass with piano accompaniment based on a text by Clemente Bondi (1742–1821) "Un lieto brindisi" (WoO 103). In 1820, he devoted the "Evening Song under the Starry Heaven" (WoO 150) after a text by Heinrich Goeble (a pseudonym of Otto Heinrich von Loeben, 1786–1825). It was published in March 1820 in the *Wiener Zeitschrift für Kunst, Lit-*

eratur, Theater und Mode as a "music supplement." In the same volume of this journal, the December issue published, likewise as a music supplement, Franz Schubert's song "Die Forelle" Op. 32, based on a text by Christian Friedrich Daniel Schubart (1739–1791). In 1825 Beethoven in turn wrote a letter to Braunhofer, which contained a simulated doctor-patient dialogue, and attached a canon to this letter, too, which has the text: "Doctor closes the gate to death,/ Notes help escape from the woes, too."[9] In his conversation notebook, he wrote concerning this canon: "My doctor helped, for I could no longer write the notes, but now I write notes that helped me escape from my woes."[10]

It becomes clear from this letter to Braunhofer that Beethoven must have engaged in depth with the common teachings of Maximilian Stoll and John Brown (see above) as essential medical doctrines of his time, since he has the doctor say: "[…] I will help, soon be a follower of Brown and of Stoll etc. […]." So from a modern perspective one could describe Beethoven as an informed and, as it were, responsible patient.

Besides Wegeler, Beethoven also held Schmidt in high regard, as can be gathered from the Heiligenstadt Testament. He made no criticism of the doctor up until his early death in 1808, although Schmidt had advised him to try the—certainly heroic—therapy using galvanization as described below. Beethoven was also ready at any time, however, to question the doctors treating him, indeed to offend them, if he was not satisfied with them. The doctor's authority— for example, the recommendation made by Staudenheim and Wawruchs to desist from consuming alcohol—was something he followed only unwillingly, or indeed not all, switching to another doctor without further ado—for instance, from Frank, who was seen as an expert in Vienna, to von Vering, as early as 1801. Two of the doctors named above whose care Beethoven had left of his own violition, namely Braunhofer and Staudenheim, initially refused in December 1826 to once again treat Beethoven, now seriously ill. This is hardly surprising when we consider that he had described Staudenheim in a letter of 1824 as a "doctor of comedies" and had also rapidly changed his opinion of Braunhofer,

as he—a few days after sending the doctor the letter and moody canon—wrote to his nephew Karl: "[…] for the prescriptions of this man Braunhofer have already gone wrong several times, and generally he seems to me very limited and to be a fool with it; […]". Malfatti, too, whom he vilified in June 1817 in a letter as a "sharp Italian" who had "strong secondary aims" and who "lacked both honesty and insight," was initially hesitant to intervene in the ongoing treatment of his colleague Wawruch, although Beethoven's friends had tried to persuade him to do so. He explained his initial reluctance in writing: "Tell Beethoven that as a master of harmony he will know that I have to live in harmony with my colleagues, too."[11] In the end, he agreed to assist in the treatment, since his colleague Wawruch also appreciated his advice as a long-standing friend of Beethoven. According to Franken, Staudenheim and Braunhofer were also eventually prepared to join in the consultation, making four doctors in all.

Attempted therapies

The doctors took great care of their "VIP patient." So, it can be seen from the conversation notebook that Wawruch, who attended Beethoven medically during the last months of his life, introduced himself to the composer with the words: "A great admirer of your name will deploy everything possible to provide relief soon."[12] How close the care provided by the attending physicians was, at least in the last phase of his life, can be reconstructed from the number of visits invoiced. The primary surgeon of the General Hospital in Vienna, Dr. Seibert, who carried out four ascites punctures on behalf of his colleague Wawruch between December 20th, 1826 and February 27th, 1827, calculated a total of 90 visits. Projected this means—in the treatment period of about nine weeks—ten visits per week and thus on average more than one visit per day.

The doctors treated their prominent patients according to the latest state of medical knowledge of the time. The treatment methods were largely non-specific, however, and were not cau-

sal in orientation, rather intended exclusively to alleviate existing symptoms. Thus, water baths from the Danube with additional essences were used, which in part eased the complaints in the abdomen, but not the ear ailments. Attempts to treat the ear complaints were diverse. Frank prescribed almond oil, while von Vering ordered tea for the ear as well as plasters on the arms which irritated the skin, leading to blistering, as Beethoven describes in detail to Wegeler in a letter dated November 16, 1801: "For several months Vering has had vesicatories placed on both my arms, which consist of a certain rind, as you will know. – Now, that is a highly unpleasant cure, in which I am always robbed of the free use of my arms for several days (before the rind has drawn enough), without considering the pains: […]" Von Vering probably followed the teaching of John Brown here. As mentioned above, the term "Brownian" was used by Beethoven himself towards Braunhofer. The attempt was undertaken by different doctors, and by a naturopath, too, Pater Weiss, to cure Beethoven's deafness through local applications, by means of ear ointments and injections of oil. Thus, it is reported from 1819 that a certain Dr. Graff recommended as the "remedy of choice" cotton dipped in fresh horseradish, which is applied to the auditory canals – this one, too, without resounding success. Cotton is also used by Beethoven as an ear protection, the composer noting as follows on a sheet for Symphony No. 7 (A Major) Op. 92 in the so-called Petter sketchbook: "Cotton in the ears at the piano takes away the unpleasant hissing sound from my hearing." This troublesome sensation of sound—today we would call it tinnitus (cf. chap. 7, 9)—that haunted Beethoven alongside his diminishing hearing, he previously describes in his letter dated June 29, 1801 that was already quoted at the outset, in which he depicted his hearing-related symptoms for the first time to his friend Wegeler: "[…] only my ears, they continue to whoosh and roar day and night." Kerner supposes that Beethoven set these ear noises to music in the transition from the 3rd to the 4th movement of his Fifth symphony in C Minor, by reproducing the hammering in his ears using a pedal point A flat-C for 15 bars.[13] This thesis cannot be proven by biographical comments made by Beethoven or his contempor-

aries, however. The resulting sound need also not be linked to the noises in his ears alone, as the rhythmic "hammering" already plays an important role as a motif in the whole of the 3rd movement, and Beethoven himself speaks rather of a roaring sound in the ears than of a throbbing one. On the other hand, the rhythmic motif over the base chord at the indicated place could certainly be the imitation of ringing in the ears. Beethoven was already sensitive to noise early on, as he once described in the above-cited letter to Wegeler that it was unbearable for him as soon as someone yelled. Beethoven's student Ferdinand Ries reports that Beethoven "still covered his head with a pillow" in order to reduce the booming of exploding grenades during the bombardment by Napoléon's troops in 1809—whether this occurred due to a sensitivity to noise, or to protect his ears from further damage, remains open.

Beethoven was also interested in technically experimental methods to alleviate his ear disease. Franken describes how an "electro-vibration machine" of a certain Dr. Carl Josef Meyer aroused Beethoven's attention, whereby it remains unclear as to whether he actually tried this out. There is likewise mention on February 29, 1820 in the conversation notebook of another technical innovation by the Viennese mechanic Wolffsohn, namely of a "head machine for the hard of hearing"—a device in the form of flat-pressed diadem that can be worn unnoticed. Mention should be made of the ear trumpets that Johann Nepomuk Mälzel (1772–1838) constructed for Beethoven in 1813 (cf. chap. 8) as a small, functional, technical hearing aid that Beethoven demonstrably used as well. In addition, he had an extra cover attached to a Graf grand piano in 1826 to amplify the sound[14]—similar to a prompter's cover according to the memoirs of Gerhard von Breuning.[15]

Drawing on the experiments of Alessandro Volta (1745–1827), Schmidt tried to treat Beethoven with galvanic currents, a method that derives from the "animalistic electricity" discovered by Luigi Galvani (1737–1798). In a self-experiment in 1800, using two wires, Volta had applied direct electric currents, generated by a battery he had developed himself, to his auditory canals which he had filled with common salt; the hear-

ing sensations thereby experienced reminded him of the sound of a boiling liquid.[16] In the above-cited letter to Wegeler of November 16, 1801, Beethoven writes about Schmidt and galvanism: "[…] What do you think of Schmidt? While I don't like to change, it seems to me that Vering is too much the practician for him to get many new ideas from reading. Schmidt seems to in this regard to be quite a different person and would perhaps not be quite so sloppy, either. Galvanism is said to work wonders; what do you say about it? A doctor told me that he saw a deaf-mute child regain his hearing in Berlin, and a man, who likewise had been deaf for seven years and then get back his hearing. I have just heard that your Schmidt is doing experiments here. […]"

Here we once again find the belief in miracles already mentioned at the beginning, something Beethoven succumbed to with almost child-like naivety. He was in no way alone in this, rather very much a child of his time. Thus, there are reports of a "miracle cure" that the blind Viennese pianist, composer and piano teacher Maria Theresia von Paradis (1759–1824) was said to have experienced as a result of treatment using the "magnetism" method as practiced by Franz Anton Mesmer. It is said she was able to see following the treatment, at least temporarily—an occurence that remains doubtful and in any case was not lasting. The story of Paradis was given filmic and book treatment, including Alissa Walser, who, with her 2010 novel "Am Anfang war die Nacht Musik" (title in English: Mesmerized), erected a literary monument to this event.[17]

There was no specific therapy for ear diseases until well into the 20th century (cf. chap. 9). Smetana, another prominent musician who had dramatic problems with his hearing, could also not be helped causally with his symphilis-related deafness that arose in 1874, nor with his unpleasant tinnitus, even though he was born more than a generation after Beethoven. Even after he had gone completely deaf, the noises in his ears continued to disturb him greatly. Smetana captured this tinnitus in a musical work, his String Quartet No. 1 in E Minor. It bears the title "From My Life," which Smetana chose himself. Smetana added to this string quartet a specific "program," i.e. the individual

movements are not only designated the usual musical term; Smetana has attached comments to each movement, too. Of especial interest for us is the final, 4th movement (Vivace). The concern here—after national music and successes—is the catastrophe: incipient deafness, hope, resignation. Here the composer depicts his tinnitus, as well: After highly agitated—almost chaotic—passages, the first violin abruptly plays a high "E" in the flageolet for several bars, while the other instruments play with tremolo in a low register. This musical representation is—in contrast to the above-mentioned case of Beethoven's Fifth Symphony—Smetana's explicit and declared attempt to communicate his tinnitus "audibly" to the listener.

In all reflections on the lamentable absence of causal therapies, it must be borne in mind that in the particular case of Beethoven, understanding of the physiology of the human ear—as the basis for developing rational therapeutic concepts—was still highly fragmentary in Beethoven's day: Alfonso Corti (1822–1876) did not discover the receptor organ in the inner ear that is named after him until 1851 (cf. chap. 6).

If we set the attempts at treating the composer in the context of the knowledge and skills of doctors in Beethoven's era, then it is by no means "senseless," as alleged by Beethoven in his small side-swipe cited above in the extract from the Heiligenstadt Testament; on the contrary, it is reasonable in the Kantian sense. They attempted to construct a sound-amplifying hearing aid, on the one hand. On the other hand—out of rational considerations, since jaundice had appeared for the first time in 1821—they tried, already in the run-up to the liver disease that led to Beethoven's death, to induce him to give up alcohol. However, not all doctors joined them in making this recommendation, for Malfetti had eventually even recommended the consumption of punch-flavoured ice cream. Treating the cirrhosis of the liver that led to his death by means of ascites punctures was also rationally based, even if it was purely symptomatic. In this way, the body was to be prevented from bursting, which led, however, to the complication of an accompanying peritonitis (cf. chap. 5).

3. What medical provision and hygienic conditions existed in Vienna in general during Beethoven's lifetime?

In addition to these therapeutic measures described above, which are rather unspecific and so unproductive, we also need to consider that there were also basic deficiencies in the hygiene of the period, both in the public and private realm. At the end of the 18th and beginning of the 19th century, the hygienic conditions were disastrous from our perspective. Infectious diseases such as typhus, smallpox and tuberculosis were widespread, causing a high mortality rate. So, for example, Franz Schubert died in 1828 at age of 31, presumably of typhus. The various pox epidemics were similarly dangerous; the mortality rate for this contagious disease was around a third of those who fell ill. Nor did the disease recognize any rank or station: two children of the monarch Maria Theresia, specifically Archduchess Johanna Gabriela (1750–1762) and her sister Archduchess Maria Josepha (1751–1767), also died of smallpox. Beethoven, too, like Mozart and Haydn before him, had gone through this viral disease in his youth. The face mask of the living Beethoven created in 1812 by Franz Klein (1779–1840) shows characteristic smallpox scars, especially on the chin. While the English doctor Edward Jenner (1749–1823) first carried out a successful smallpox vaccination in 1796, it still took years for the initial skepticism towards this method to be overcome. Not until 1980 was the World Health Organisation (WHO) able to announce the elimination of smallpox as the result of a global vaccination program that had been pursued steadily for more than a decade.[18] Similarly widespread and marked by a high mortality rate was tuberculosis, which was likewise incurable in the 18th and 19th century. Both Beethoven's mother and his brother Kasper Karl probably died of this disease, in 1797 and 1815 respectively.

Friedrich Schiller (1759–1805), whose 1785 "Ode to Joy" Beethoven set to music in 1823 as the final chorus of his Ninth Symphony, also died of this disease, then known as "consumption".

Around the turn of the 18th and 19th century there were efforts made to undertake general hygienic measures to prevent

epidemics. The afore-mentioned successor to Maria Theresia, her son Joseph II, issued a Burial Decree in 1784 which pursued health policy goals. Graveyards were laid outside of the city and instructions were issued according to which the dead were to be buried in shaft graves without wooden coffins and families should no longer attend the burials. These key measures, which contrasted to the traditions hitherto, were met with incomprehension, indeed open resistance arose in the Viennese population, so that Joseph II had to modify them in part. The new regulations throw a different light on the creation of the legend in which Mozart was supposed to been "buried" in a "mass grave", "lonely" and without the participation of his "heartless" relatives and friends. This was not the case; rather the family and friends were only obeying the graveyard regulations in force at this time.

The above-mentioned Peter Johann Frank, who temporarily treated Beethoven as a doctor in 1801, was a pioneer of social medicine in the Vienna of this period. He turned the general state of health of the city's population into a political issue with his main work, the "System einer vollständigen medicinischen Polizey" (System of a Complete Medical Policy), which he wrote from 1779 to 1819. In it Frank proceeded from the "misery of the people as the mother of diseases" and saw diseases as mostly caused by the unnatural way of life of humans.[19]

Privately, Beethoven lived in a state of domestic disorder, in hygienic conditions that were rather poor as described by several contemporaries. Thus, Carl Czerny (1791–1857), who was to become the virtuosic pianist, composer and teacher, recalls how as a ten-year-old he played to Beethoven for the first time in 1800: "[…] A very chaotic looking room, papers and items of clothing strewn everywhere, several suitcases, bare walls, hardly a chair. […]"[20] Carl Maria von Weber (1786–1826), too, is said to have experienced something similar during a visit to Beethoven in Baden bei Wien in 1823, as his son Max Maria reported in 1866: "[…] The greatest mess, music, money, clothes on the floor, washing piled up on the dirty bed, the open grand piano covered with thick dust, broken coffee crockery on the table […]."[21]

4. What similarities to and differences with other composers are revealed in respect of medical diagnostics and treatment?

For our understanding of the special circumstances of Beethoven "illness files," it seems helpful also to consider other well-known composers who reveal parallels with Beethoven. On the question of hearing, Bedřich Smetana (1824–1884) should be used for this purpose. While Smetana was not born until three years after Beethoven's death, he likewise suffered from the limitations that affected the diagnosis and treatment of his hearing impairment. A composer comparably famous to Beethoven, and the causes of whose illness are not conclusively explained from a modern-day perspective, and whose lifespan falls almost within the same medical-historical era, is Wolfgang Amadeus Mozart (1756–1791). He, too, will be placed beside Beethoven in the following deliberations.

If we take the medical histories of Mozart, Beethoven and Smetana *pars pro toto* as examples of the development of medicine from the end of the 18th to the last third of the 19th century, then clear progress in the diagnostic possibilities can be determined, which, however, cannot be stated in the same way for therapy, unfortunately. Moreover, it seems interesting to compare the parameters prevailing at that time with the opportunities available today. Of course, this can only happen in a purely hypothetical manner, as a great deal remains unclear, due to the lack of clear diagnoses and imprecise concepts. A discussion of this kind is thus bound to be speculative in nature.

The illness leading to *Mozart's* death was depicted in 1791 in purely descriptive terms, with no autopsy taking place. The designation given to his illness cannot be retrospectively allocated to any disease entity familiar to us today. The therapy that took place was blood-letting, a measure that as we now know led not to an improvement, but rather to a worsening of his condition. An assessment as to whether a causal therapy would be possible today depends on the underlying illness. A discussion as to possible underlying illnesses would go well beyond the parameters of the present chapter. Today, however, using comprehensive laboratory- and imaging-based diagnostics, it would presum-

ably be possible to name the genesis of Mozart's disease. If the cause of death had indeed been uremia due to terminal renal failure, haemodialysis would be the treatment of choice today, along with anti-inflammatory, antipyretic and other intensive care measures undertaken during the acute phase of the disease in the final days. Were the kidneys to have been irreparable due to underlying disease, then a kidney transplant would been considered. So it does not seem bold to assume that Mozart could be treated today in a way that the disease need not have led to his death at a young age.

Beethoven suffered from various symptomatic complexes of the gastrointestinal tract; moreover, his hearing progressively worsened and he suffered from headaches, too. Besides, there were significant psychological problems with depression, which led to repeatedly expressed thoughts of suicide.

With regard to the various diseases that accompanied him for many years of his life, Beethoven was treated generally—primarily following the teachings of Brown, we assume. His consumption of alcohol and his mental health issues were likewise not treated in a specific or consistent way, either. A liver dysfunction was correctly recognized long before his death in 1827, however—also due to the jaundice that already arose in 1821. He was sensibly advised to forgo alcohol and in the final stage an attempt was made with the punctures to alleviate the symptoms in a way that was certainly reasonable. An autopsy followed, which with regard to the liver produced a finding typical of a cirrhosis. This diagnosis also seems probable from a modern perspective. Moreover, signs were found—likewise correctly interpreted according to modern-day knowledge—of pancreatitis and peritonitis (cf. Chapter 5). Concerning the hearing affliction, the autopsy yielded no findings that can be clearly utilized today. Similar to Mozart, it is the case with Beethoven that nowadays one would for sure be more likely to succeed in assigning the various diseases by means of laboratory-, imaging- and function-related diagnostics. However, treatment of so multimorbid a patient would probably be difficult today, too. With regard to the gastro-enterological diseases, which after all must always be seen in conjunction with the psy-

chological state, there would certainly be no guarantee of a successful cure even now (cf. chap. 5), just as slight a chance as with the agonizing headaches.

The psychological complaints, too, could be influenced positively only with full compliance of the patient. With regard to the deafness, even today a causal therapy would probably not be possible. However, depending on the actual underlying disease, therapies that are promising in terms of symptoms could be initiated (cf. chap. 9).

Smetana died in 1884, after he had already been deaf for ten years. During Smetana's lifetime, the attending doctors presumed a syphilitic infection to be the cause of the deafness, which can be read from—among other things—the fact that the renowned Viennese ENT doctor Prof. Dr. Adam Politzer (1835–1920) already diagnosed a "labyrinth paralysis" in 1875 and recommended this to be treated with an ointment applied to the whole body. With respect to the ear symptoms, he proposed—again non-specifically—that it be cured with "electrifying." This electro-therapy was carried out under the guidance of Prof. Dr. Emanuel Zaufal (1837–1910), though without any resultant improvement. The autopsy, which was undertaken by Dr. Jaroslav Hlava (1855–1924) in Prague, showed morphological changes to the brain, as typical of a progressive paralysis caused by syphilis. In the case of Smetana, the diagnosis was therefore correctly made on the basis of the clinical findings alone. Today, it would easily be possible, by means of a smear from the primary effect (Ulcus durum)—Smetana himself described this as a "pus ulcer" in a diary entry of April 30, 1874[22]—to detect the disease-causing bacterium *Treponema pallidum*. This only becomes possible in 1905, however. A causal therapy of syphilis that leads to a sure recovery was not yet possible during Smetana's lifetime. Today, it would be relatively easy and fail-safe to treat and cure the syphilis using specific antibiotics. Since a causal therapy of the underlying disease would hence be possible, Smetana would no longer reach the tertiary stage of neurosyphilis if treated early enough. It can thus be reasonably assumed that Smetana would not have gone deaf today.

Coda

The questions posed at the outset can broadly be answered on the basis of the remarks made above. The medical science at the time Beethoven lived was infused with the spirit of the Enlightenment. The paradigm shift from superstition to reason, from dogmatic doctrines to insights based on research and experimentation, from scholastic book-based knowledge to practical experience-based knowledge gained from observation at the hospital bedside laid the foundations for "conventional medicine," which, in its extensive use of differentiation from understanding deriving from "evidence-based medicine," continues to the present day.

In Beethoven's day, we can see the beginnings of this ongoing development in medicine; however, the diagnostic and therapeutic possibilities did not come even close to the standards of medical care that we now regard as a matter of course.

When compared with Europe, the *general medical provision in Beethoven's time* in Vienna can be assessed as very good, on the other hand. From the mid-18th century to around 1830, the first Vienna School of Medicine was decisively involved in the development of innovative diagnostic and therapeutic processes. An example of this is the method of percussion first described in 1761 by Johann Leopold Auenbrugger (1722–1809), a student of van Swieten, as a "new invention by means of striking the human chest, as a sign to discover hidden chest diseases."[23] In 1781, as a "sideline," Auenbrugger also wrote the libretto for Antonio Salieri's (1750–1825) light opera "Der Rauchfangkehrer" (The Chimney Sweep).

The *treatment possibilities* available to doctors, i.e. the de facto medical art of healing the ill, were highly restricted from a modern viewpoint. This was due not to the *doctors whom Beethoven consulted*, who, as luminaries, also in the university context, were high-level representatives of their profession, but rather on account of the limited level of knowledge.

This gap between a "Faustian drive to do research," which wishes to detect what "holds [*humans*] together in their innermost being" and the actual improvements in treatment could

not be closed quickly, not even by the "Second Vienna School of Medicine," which helped the University of Vienna to achieve world renown in the 19th century. The foundation of this school, which constantly developed throughout the period of around 1830 to the 1930s, was formed by the pathological-anatomical studies of Carl Freiherr von Rokitansky (1804–1878) and several others. From 1831 onwards, Rokitanksy was officially the student of Dr. Johannes Wagner (1800–1832), who carried out the dissection of Beethoven's corpse on March 27, 1827. Some sources report that Rokitansky was present at the postmortem examination as Wagner's assistant.[24] Rokitansky succeeded Wagner, who died at an early age, as senior associate professor at the Pathological-Anatomical Prosthesis of the Vienna General Hospital from 1834 onwards. He made a key discovery by systematically comparing postmortem findings with clinical symptoms and the physical examination results of percussion and auscultation.

The *medical provision* and *hygienic conditions in Vienna during Beethoven's lifetime* were generally poor. The mean life expectancy when Beethoven was alive was only around 40 years. Beethoven himself reached the age of 56, i. e. was older than the "average person" of his time, while his mother died aged 40 and his brother Karl at 41. This low average life expectancy did not improve significantly throughout the 19th century, rather it was not until that the first half of the 20th century that it slowly rose, whereby large differences remained between individual countries. Only after the Second World War did the figures converge in most countries of the developed world. The Swedish health researcher Hans Rosling has illustrated this development in a particularly clear way in video clips. On YouTube, one can watch with astonishment a four-minute overview of the sociocultural changes and the life expectancy that our world has experienced over a 200-year period from 1810 to 2009.[25]

Today the mean life expectancy in the countries with good health care lies around eight decades, or even above that—so approximately double that in Beethoven's time.

With regard to *medical diagnostics*, progress had been made since Mozart's time in the case of Beethoven and Smetana. The

physical examination of patients produced a clear picture of the disease entities, while the postmortems carried out on Beethoven and Smetana yielded additional insight gained. Concerning *medical treatment*, the similiarities between Mozart, Beethoven and Smetana remained large, though significant paradigmatic differences cannot—regrettably—be determined.

Adnotations

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[11] quoted from: Caeyers, J. *Beethoven: Der einsame Revolutionär – Eine Biographie*. Munich: C. H. Beck, 2012, p. 749.
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Chapter 3

Beethoven's friendship with the Bonn doctor Prof. Wegeler

Norbert Flörken
(together with Felix Julius Wegeler and Malte Boecker)

Among the few people with whom Beethoven was connected from youth on until his passing are Franz Gerhard and Eleonore Wegeler, née von Breuning. The relationship between them was marked by mutual appreciation and friendly affection, as the following insight into the preserved correspondence reveals.

Where and how Wegeler[1] (* 1765) and Beethoven (* 1770)[2] met in 1784 can no longer be determined. All that is certain is that the 19-year old student Wegeler introduced the schoolboy Ludwig, who was five years younger, to the house of the widow Helene von Breuning on Münsterplatz in Bonn.[3] There, Ludwig gave piano lessons to the children Eleonore (* 1771) and Lorenz (* 1776) from 1785 onwards. It is known that the Breuning house became a second home to the young Ludwig; the "Hofrätin" (court councilor's wife) knew how to handle the occasionally quick-tempered or also stubborn Ludwig, and she gave his temperament the name "raptus"—which means a state of excitement that begins abruptly. Beethoven even flirted with this expression later on.

At the age of 13, Beethoven became assistant court organist for Elector Max Franz, thus stepping into the shoes of his father Johann and grandfather Ludwig, who were also already members of the court orchestra. Increasingly, the young Ludwig shone on account of his piano-playing, as can be discerned from a later report from 1791: he showed in his improvisation an *almost inexhaustible wealth in his ideas, in accordance with the quite special manner of expression of his playing and the skill with which he plays. I therefore would not know what else he could be lacking for the greatness of the artist.*[4]

The extent to which the young Beethoven developed feelings for Eleonore during their time in Bonn together can only be a matter of speculation. What is certain is that the social barriers in place at the time would have prevented a close bond. Not until 1802, during the years of the French rule, could Eleonore marry a member of the bourgeoisie—the very same Franz Gerhard Wegeler who meanwhile had become a doctor and professor. In any case, Beethoven sent her affectionate greetings in his (sporadic but emotional) letters to Wegeler. Beethoven and Wegeler, who unlike Beethoven had regular access to the book collections of the Lesegesellschaft of 1787 ("Lese"),[5] were connected, moreover, by an interest in current social developments following the French Revolution. At the beginning of the 1790s they will have buried themselves in the poetry volume of the inflammatory Bonn professor Eulogius Schneider; and Ludwig copied[6] for his friend the socially critical "Kaplied" by the Württemberg poet Christian Friedrich Daniel Schubart.

In 1792 Beethoven had traveled to Vienna with the financial support of his employer, the Elector, in order to continue his education there. The occupation of the left bank of the Rhine by the French[7] in October 1794, followed later by the dissolution of the Electorate of Cologne, made a return impossible. In 1794, Wegeler, who had fallen out with the new incoming rulers, followed him—not entirely of his own volition—to the Austrian capital. *[Rarely] did a day pass without them seeing one another.*[8]

He had already once—from 1787 to 1789—*[been] to Vienna with the excellent recommendation and support [of the Elector] in order to continue studying pharmacology at the excellent institutions there, by name at the Josephinische Akademie under Hunczowsky, Schmidt, Plenk and others, then at the university and the general citizens' hospital and birthing house linked to it, under Quarin, de Vigiliis, Zeller and others. His keen endeavors soon won him the affection and friendship of his teachers, among whom he lived in the warmest bond with Hunczowsky, Adam Schmidt and Wilhelm Schmitt. […] In Vienna Wegeler attained the doctor's degree on September 1, 1789 […].*[9] In the

same year he was appointed Professor of Obstetrics and Forensic Medicine in Bonn.

Other citizens of Bonn arrived in Vienna: Lorenz von Breuning (* 1777) in 1794, the youngest of the Breuning children, who, looked after by Wegeler, heard lectures by the professor of surgery von Hunczovsky; his brothers Stephan (* 1774) and Christoph (* 1773) followed in 1795. All three soon left Vienna with differing goals, however. And in 1803, Ferdinand Ries (1784–1838) set off for Vienna, in order to learn under Beethoven.

On May 30, 1796, Wegeler and Christoph von Breuning returned to Bonn from Vienna *after a […] jolly and […] friendly supper*[10]; Franz and Ludwig saw each other for the last time on that occasion; from then on, they keep in touch through rare letters. Wegeler once again took up his teaching position at the University of Bonn[11]—however, this ceased to operate in 1798. Instead, Wegeler became a teacher of obstetrics at the Bonn Centralschule, which was built on the French model. In this year—four years after the conquest—it became apparent that the left bank of the Rhine would become French territory; to this extent, the political situation calmed down, and the "Lese," which had suffered badly in the turmoil of the 1790s, made a new attempt in 1798—spurred on by Dr. med. Wegeler—and was reopened on December 1, 1798 with the permission and support of the French.

In 1801—Ludwig is 30 years old, the first symphony had been premiered a year previously—he reveals to his doctor friend Franz, as one of the first, his hearing impairment and lower abdomen ailments. The first symptoms of deafness had already arisen in 1797; up until then he had not spoken of them or had passed them off as absent-mindedness in front of others.

[F]or three years, my hearing has been getting weaker […] only my ears, which continually whoosh and roar night and day; I can say, I lead a wretched life, for nearly 2 years I have been avoiding all company, because it is now not possible to tell people I am deaf […] that I have to be very close to the orchestra or even lean toward it in order to understand the performers, the high notes of instruments [or] singing voices, when I am

somewhat further away, I don't hear them, when speaking there are people who surprisingly never notice it, as I am subject to fits of absence, they attribute it to that cause, sometimes I hardly hear the person talking quietly, the tones perhaps, yes, but not the words, and yet as soon as someone shouts, I can't bear it.[12]

This letter to Wegeler is of great significance for researchers, as it allows conclusions to be drawn about the extent of his hearing impairment, which range from tinnitus, high-frequency hearing loss and inability to understand speech, to hyperacusis, as H. P. Zenner has demonstrated[13] (cf. chap. 7, 9). According to Zenner, Beethoven describes "the characteristic, social isolation of the deaf person, deafness as an illness that is doubly invisible in the truest sense of the word: one cannot see it, and the persons affected render themselves invisible."

Beethoven himself knew too well what this condition means for a musician: *[I]f I had some other occupation, then it would rather be possible, but in my occupation, it is a terrible situation.*[14]

For this reason, he implores his friend to maintain absolute confidentiality, even toward his wife Eleonore: *[I] ask you to say nothing of this my condition, not even to Lorchen, I entrust you with it only as a secret.* And he asks him to establish contact with his Viennese colleague Gerhard Ritter von Vering (1755–1823):

I would like it if you would once correspond with Wering about this.

To begin with, the friend from far-off Bonn was probably not able to do much more than inform his colleague. Ludwig is already planning the next step but one: *[Should] my condition continue, I will come to you next spring, you rent me a house in the country somewhere in a lovely area, and then I will become a farmer for half a year, perhaps it will be changed by that.*

Five months later, on November 16, 1801[15], Ludwig reports to his friend from Bonn in a similarly meaningful letter: *It is now true, I cannot deny it, the ringing and buzzing is somewhat weaker than otherwise, especially in the left ear, with which my disease actually began, but my hearing has for sure not gotten*

any better, I do not dare to determine whether it has not rather become weaker? – my lower abdomen is better, especially if I use the luke-warm bath for a few days, I feel rather well for 8 days, or 10, too […] I am now beginning with the herbs on my stomach as you advised.

With regard to the lower abdomen ailments mentioned several times, please refer to the detailed description by Strassding (cf. chap. 5).

The cures were probably not really successful, after all, for Ludwig continues:

W.[ering] wants to know nothing whatsoever of plunge baths but I am very dissatisfied with him, he has far too little concern and indulgence for a disease such as this, if I did not go to him, which is no easy matter, I should never see him at all – what do you think of Schmidt, I don't like to change, yet W. seems to me too much a practitioner to acquire new ideas by reading – S.[chmidt] seems to me a very different man in this regard and would perhaps not be so negligent?

As Zenner rightly remarks, "Beethoven's hopping from one doctor to another was no surprise, but the best doctors of his time could none of them help him."

The variety of treatment methods ranging from almond oil ear drops, horseradish cotton, types of tea and vesicants to tepid baths in the Danube corresponded to the state of knowledge at the time (cf. chap. 2). The suffering ill person asks his doctor friend for alternative cures: *One speaks miracles of galvanism what is your opinion of it?*[16] A reply from Wegeler to this has not been preserved. It is also questionable whether Wegeler was able or wanted to make a diagnosis from afar with Beethoven's imprecise descriptions; Ludwig's lifestyle, which it is safe to call chaotic, was familiar to him from the years spent together, after all, as presumably was his way of actually *never […] taking seriously the advice of a doctor.*[17]

Yet Ludwig does not see his situation as so bad after all, indeed he is even rather buoyant: *I now live somewhat more agreeably again by mixing more with people, you can barely believe how tediously, how sadly I have led my life over the last two years, my weak hearing has appeared everywhere like a*

ghost, and I flee – the people, must seem misanthropic [to them], and yet I am not at all like that, this change has been brought about by a lovely, enchanting girl,[18] *who loves me and whom I love, I have once more had some blissful moments these past 2 years, and this is the first time that I feel, that – marrying could make me happy, unfortunately she is not of my station – and now – I of course could not marry at this time.*[19]

And defiantly he discloses: *[Y]ou should see me as happy as I am granted to be down here, not unhappy – no, I could not bear that – I want to grasp fate by the throat, it shall certainly not succeed in dragging me down – oh, it is so wonderful to live life a thousand times – for a quiet – life, no I can feel it, I am no longer made for that.*

With this, he put aside the tranquil life of a farmer of which he had still spoken above. – In October 1802 Beethoven laments in his "Heiligenstadt Testament": *I must live […] like one who has been banished, […] But what a humiliation for me when someone standing next to me heard a flute in the distance and I heard nothing, or someone standing next to me heard a shepherd singing and again I heard nothing, such incidents drove me almost to despair, a little more of that and I would have ended my life – it was only my art that held me back. […]*[20]

Two years later, on October 13, 1804, Wegeler receives a letter from his concerned brother-in-law Stephan von Breuning, who had lived with and worked for Beethoven until recently: *The only friend who remained for me here from my youthful years also contributes often and a great deal to the fact that I have been forced to neglect those who are absent. You will not believe, dear Wegeler, what indescribable and, I wish to say, awful effect the decline in his hearing has had upon him. – Imagine the feeling of being unhappy with his violent character, with taciturnity here, mistrust, often toward his best friends, indecisiveness in many things.*[21]

Indeed, in view of his deafness, Beethoven had already considered thoughts of suicide in the Heiligenstadt Testament and once again repudiated them (cf. chap. 4); in 1810 he expressly spurns them: *[H]ad I not read somewhere that man may not freely depart from his life as long as he can still do a good deed,*

I would long since have been no more – namely, through my own hand.[22]

Wegeler experiences happiness in the family at this time: the little daughter Helene (* 1803 "Lenchen") brings her parents great joy: *on October the 1st, 1803 our dear little daughter got the first incisor on the lower left side, on the 4th, on the right side. — On the 1st of November she gave her first kiss, on the 16th she sang properly, on the 29th she threw herself freely from the sofa armrest into her father's arms*, her mother Eleonore writes in her diary.[23]

Around this time Beethoven seems on occasion to have thought of entering into matrimony; in May 1810 he becomes specific in this regard toward Wegeler, whom he asks to procure his baptism certificate in Bonn at the earliest opportunity: *You will not refuse me a friendly request when I entreat you to obtain my baptism certificate […] should you also consider it worth the effort to inquire into this matter and it would please you to make the journey from [your place of residence] Koblenz to Bonn, then just charge it all to me […] The sooner you can send me the baptism certificate, the greater my obligation to you.*[24]

Ludwig does not reveal who the young lady is, on account of whom he wishes to get the friend involved. It is Therese Malfatti, 20 years younger than Ludwig, daughter of a distinguished bankers' family, who soon conveys to him, however, that he is welcome as a musician, but not a candidate for marriage.[25]

Wegeler only learns of the failure of Beethoven's marital plans months later—and not from Ludwig himself, rather from Stephan von Breuning, to whom *Beethoven [says] at least once a week that he wishes to write to you.*[26] Obviously, it causes Ludwig, no great writer of letters anyway, embarrassment to admit the failure of his courtship to the friend. In the correspondence between Wegeler and Beethoven there is now a break of several years, only interrupted in 1816 by Ludwig's present of a Bohemian glass and a Höfel etching after Letronne with the dedication *For my friend Wegeler. Vienna on 27th March 1815*.[27] Beethoven concludes the covering note of September 29, 1816 with the words: *[F]arewell you are a husband [and] father I am too*

though without a wife – greeting to all yours and all ours – your friend l. v. Beethoven.[28]

Wegeler later comments on this passage in the notes: *Beethoven raised the son of his brother Caspar, who had died the previous year.*[29] Whether a different interpretation—for example, concerning Josephine Brunsvik—is possible, one that did not occur to Wegeler, is something that Beethoven research may answer.

The break in the correspondence—*just not very lively*[30]—is explained by Wegeler with the remark that *several letters eluded me even then or were given to lovers of autographs.*

The next letter[31] is dated December 28, 1825, and written to Beethoven from the 60-year old Wegeler and his wife Eleonore; as key significance is accorded to it and to Beethoven's reply, it is reproduced here extensively:

My dear old Louis*!*

[…] as we old ones like to live in the past so much, and amuse ourselves most of all with pictures from our youth. To me at least, my acquaintance and the close friendship of youth with you, blessed by your good mother, has been a very bright point in my life, which I look back on with pleasure and which engages me on travels, above all. Now I look up to you as to a hero, *and am proud to be able to say: I was not without influence on his development, he confided his wishes and dreams in me, and if he was later so frequently misunderstood, I surely knew what he wanted. Thank God that I am able to talk to my wife about you, and later to my children; after all, the house of my mother-in-law was more your home than your own, especially after you had lost your noble mother. Tell us just one more time: yes, I think of you both in cheerful and gloomy moods! – Is not man, no matter how high he reaches, as yourself, in fact only happy once in his life, namely in his youth; the stone of Bonn, Creuzberg, Godesburg, the tree school etc. etc. have hooks for you, on which you can cheerfully hang many an idea.*

In what follows, Wegeler gives the friend a summary of his own life:

However, now I wish to tell you something of me, of us, in order to give you an example of how you have to reply to me. After my return from Vienna in 1796, things went pretty badly for me; I had to live from the practice alone for several years, and that took some years in the highly impoverished region before I earned my living. But now I became a paid professor again [at the Bonn Centralschule], and then married in 1802. The year after I had a girl who is still alive and who has turned out quite well. With much good sense, she has the cheerful nature of her father, and likes to play Beethoven sonatas *best of all. There is probably no merit in this, rather it is innate. In 1807 a son [= Julius Stephan] was born to me, who now studies medicine in Berlin. After 4 years I will send him to Vienna, will you look after him? Of your friend's family, the father died aged 70, on* Jan. *1, 1800. – Of that of my wife, the scholar died 4 years ago, aged 72, the [Margarethe von]* Stockhausen *aunt from [Beul an] der Ahr in this year at the age of 73. Mama [Helene von]* Breuning *is 76, the uncle [Canonicus Johann Philipp von Breuning] in* Kerpen *is 85 years old. The latter still enjoys life, and often speaks of you,* – Mama *moved to Cologne with the aunt, they lived in their parents' [von Kerich] house, which they set foot in again after 66 years, then had it rebuilt etc. I myself celebrated my 60th birthday in a society of some 60 friends and acquaintances, in which the dignitaries of the city could be found. – I have lived here since 1807, have a lovely house, and a wonderful position. My superiors are content with me and the [Prussian] king has bestowed orders and medals upon me. Lore and I are also in quite good health.*

Here Wegeler is inaccurate in his review of the year 1796, as he was officially once again, or still, professor at the university, which lost more and more students, however, and closed down in 1798.

And Eleonore writes:[32]

For a long time dear Beethoven! it was my wish that Wegeler may write to you once again – now as this wish has been fulfilled I believe I have to add a few words – not only in order to

remind you of me more clearly, but in order to repeat the important question as to whether you have no desire at all to see once again the Rhine and the place of your birth. – You will be the most welcome guest for us at any time and hour – and will give Weg.[eler] and myself the greatest pleasure – our Lenchen is grateful to you for many a merry hour – likes so much to hear of talk of you – knows all the small incidents of our merry youth in Bonn – knows of discord and reconciliation – – how happy she would be to see you! – the girl, unfortunately, has no musical talent, yet through great diligence and perseverance she has reached the point where she can play your sonatas [and] variations and the like, and as music remains the greatest relaxation for Weg.[eler], she provides him with many a happy hour in this way. Julius has musical talent, though was negligent with it to date – and over the last half year he has learned the Violincello *with zeal and joy as he has a good teacher in Berlin, I think for sure that he will learn still more – both children are tall and resemble their father – also in their merry cheerful mood, which has not yet completely left Weg.[eler], thank God – –*

He has great pleasure playing the themes of your variations, the old ones rest on top yet he sometimes practices a new one with incredible patience – Your Song of Sacrifice is at the top – he never enters the living room without going to the piano – in that already dear Beethoven! you can see in what continuous memory you are living with us – tell us just one more time that this has some value for you, and that we, too, are not completely forgotten by you – If it were not so hard to satisfy our dearest wishes, we have already visited the brother in Vienna, whereby the pleasure of seeing you would certainly be allowed for – but we surely cannot think of such a journey at present as the son is in Berlin – Weg.[eler] has told you how things are with us – we had no right to complain – even the most difficult time passed us by more fortunately than 100 others – the greatest fortune is that we are healthy, and the children are good and virtuous – indeed neither of them has caused us any vexation whatsoever – and are themselves happy and in cheerful spirits – farewell dear Beethoven and think well and honestly of us – – Ele[onore] Wegeler

Almost one year passes before Beethoven answers[33], on December 7, 1826; two years previously the Ninth Symphony had been premiered. Beethoven is now almost 56 years old and has only a few months left to live.

My old beloved friend!

I am unable to express what pleasure your letter and that from Lorchen *caused me. Naturally, an answer should have followed swift as an arrow; however, with respect to writing, I am always a bit negligent, since I think that the better people know me, anyway. Often, I am drafting an answer in my head, but when I want to write it down, I often throw the pen away, since I am not able to write as I feel. I remember all the love that you have always shown me, for example, when you had my room whitewashed and when you surprised me so pleasantly – also with respect to the Breuning family[.] If we drifted apart, it was due to the course of life; each one had to follow his destiny and to strive to achieve it. Alone, the eternally unshakeable, solid principles of goodness held us closely together.—Unfortunately, today, I cannot write to you as much as I would wish, since I am lying in bed; therefore, I shall restrict myself to answering a few points of your letter. […]*

You write of your son. It goes without saying that when he arrives here, he will find a friend and father in me; and where I will be able to assist him in something or to help him, I will do so with pleasure. –

Of your Lorchen I still have the silhouette, from which can be seen that everything dear and good from my youth is still dear to me.

Of my diplomas I will only write briefly that I have become an honorary member of the Royal Society of Sciences in Sweden, also in Amsterdam, and also honorary citizen of Vienna.– Not long ago, a certain Dr. Spicker took my last great [Ninth] Symphony with Chorus with him to Berlin; it is dedicated to the King and I had to write the dedication with my own hand. Earlier, I had already applied to the Embassy for permission to dedicate the work to the King; which was granted to me. […]

By the way, my motto is always Nulla dies sine linea: *and if I*

let the muse slumber, then it only happens that it awakens with all the more power. I hope that I can still bring forth a few great works and then to end my earthly career like an old child somewhere among good people – You will receive some musical items from the Brothers Schott in Mainz. – The portrait that you will receive, as well, is an artistic masterpiece, but it is not the last that has been made of me. – Of the honors bestowed upon me, which, I know, will delight you, I can still report that from the recently deceased King of France, I have received a Medal, *with the inscription:* Donné par le Roi a Monsieur Beethoven; *which was accompanied by a very kind letter from the* premier Gentilhomme du Roi, Duc de Châtres.

My beloved friend! Make do with this for today, as I, in any event, am moved by memories of the past; and not without many tears will you receive this letter. The start has been made, and soon, you will receive another letter; and the more often you write to me, the more pleasure you will bring me. There can be no question on either side as to our friendship, and thus, farewell; I ask you to embrace and kiss your dear Lorchen and your children in my name and to think of me when you do so. God be with all of you!

As always, your faithful and true friend who honors you
Beethoven

Wegeler must have read from the last lines of the letter in particular that Beethoven had lost a great deal of courage to face life; the passage on Eleonore's silhouette reveals the ability to reminisce that accompanies age. Thus, Wegeler considers it appropriate on February 1, 1827[34] to convey courage and optimism to his friend by presenting him with specific plans: *But the word: visit reminds me painfully of your illness, although I see in the same the means to realize my most fervent wishes. You will recover from the illness you currently suffer from in the first few months; the guarantee of this is not so much your sturdy manhood; [rather] your whole constitution, the temporary causes of the same, as [well as] the nature of the illness itself, which, while stubborn and drawn-out, will give way nonetheless to unweakened nature and the strivings of art. Follow-up treatment is*

now necessary and this, if I do not completely misjudge your nausea, you will find in Karlsbad. Now in this part of the world, so many express coaches leave that I can be in Karlsbad in 4, 5 days at most, or I can send one of my patients there and accompany him. We will then spend 3 weeks there; and then a small trip through a part of southern Germany, and finally the air of your homeland and pictures from your youth and the care of my family, in which you are already now at home, will complete what is missing and strengthen what has been gained. I find this a lovely image, one that my imagination very much likes to occupy itself with.

And Eleonore adds one more time: *I can only agree with everything that Weg.[eler] has written to you dear Beethoven – yes, I cannot fail but to entreat you most warmly in a few words to bring about everything that concerns a journey here, to us, of course – I have the greatest hope that you would soon be able to fully recover here, and your visit would grant me the fulfilment of one of my greatest wishes – Why should the trip to the spa take precedence, come here and see first what the air of your homeland amounts to –*

E[leonore] Weg[eler].

Throughout all the years in Vienna, Beethoven had occasionally played with the idea of visiting the town of his birth, but this intention remained half-hearted after all, and in view now of his state of health, which Wegeler obviously was unaware of, completely illusory. On February 17, 1827[35] Beethoven, considerably misjudging the facts—or perhaps he seriously wished to downplay the danger toward the doctor?—writes, among other things: *My convalescence, if indeed I may call it such, makes very slow progress. There is reason to suspect that a 4th operation will be necessary, although the doctors have not as yet said anything about this. I exercise patience, and reflect that all evil leads sometimes to some good*[36] and sends him a portrait[37] with the dedication: *To his long-standing, honored, beloved friend F. v. Wegeler from LOUIS VAN BEETHOVEN.* He takes leave of the Wegelers: *How much I would still like to say to you to-*

day; however, I am too weak, I can therefore do no more than to embrace you in spirit together with your Lottchen [correctly: Lorchen]. In true friendship and allegiance to you and yours

Your old loyal friend

Beethoven

In the days when Beethoven wrote this to Wegeler, he received numerous visits, in particular from those who had heard of the critical state of the composer, including from Wegeler's brother-in-law Stephan von Breuning and his son Gerhard, who cheered him up with the latest stories from the city. Gerhard von Breuning recalled: *The following morning all the symptoms were there for the approaching denouement. March 26, 1827 was stormy, dull, a snow flurry with thunder and lightning arose around the sixth hour of the afternoon. – Beethoven died.*[38]

From the autopsy report of March 27, 1827[39]:

The ear cartilage appeared large and regularly formed, the boat-shaped cavity, but especially the pinna of the same were very spacious and half as low as usual; the various corners and coils were notably elevated. The outer auditory canal appeared, especially toward the hidden eardrum, covered with shiny skin scales. The Eustaschian Tube was very thickened, its mucous membrane bulging and rather narrowed toward the bony part. In front of its exit and towards the tonsils, scarred dimples were noticeable. The sizeable cells of the large mastoid process, which was not marked with any incisions, were lined by a mucous membrane rich in blood. The entire substance of the petrous bone, which was traversed by considerable vascular branches, showed a similar profusion of blood, especially in the region of the cochlea, whose membranous spiral leaf appeared slightly reddened.

The facial nerves were of considerable thickness; the auditory nerves, on the other hand, were shrunken and unmyelinated; the auditory arteries running along the same were extended by more than [the thickness of] a quill and cartilaginous. The left, much thinner auditory nerve originated with three very thin, grayish stripes, and the right with a harder,

bright white stripe from the much more consistent and sanguineous substance of the fourth ventricle of the brain. The coils of the otherwise much softer and watery brain appeared even deeper and (more spaciously) numerous than usual. The cranial vault was tight throughout and around half an inch thick.

Wegeler survived his friend Ludwig by a good 20 years; a contemporary reports of the Beethoven celebrations of 1845[40]:

Hr. Simrock, whose father, as is well known, was himself closely associated with the great composer, told us more with regard to him and mentioned also the two oldest friends of Beethoven who still lived in Bonn; these are the great-grandfather [Franz Anton] Ries (born on November 10, 1755), the same one whom Bonn University on the occasion of the celebration surprised with the honorary doctorate diploma and Hr. Geheimrat Dr. Franz Gerhart Wegeler, who, together with the deceased composer Ferdinand Ries, had the "Biographischen Notizen über Ludwig van Beethoven" published in Coblenz in 1838. We were just engaged in conversation about the latter two, when the door opened and he himself entered. A vivacious old man full of humor and spirit. He sat with us and the discussion about Beethoven that had begun earlier was continued, which now contained heightened interest due to the presence of Wegeler. The cheerful old man spiced his reports with humorous remarks which lent them a charm of their own. He informed us that he had published an addendum[41] to the previously mentioned biographical notes on Beethoven to mark the erection of his monument, and when he noticed that these were received by us with great interest, he pulled the pamphlet out of his pocket and gave a copy of it to each person.

Franz Gerhard Wegeler died in 1848, while his wife Eleonore, née von Breuning, had already passed away in 1841.

Adnotations

[1] Flörken, N. (2020). Franz Gerhard Wegeler. Ein Freund Beethovens. Reden und Schriften 1786–1845. Bonn: BonnBuchVerlag.
[2] Schloßmacher, N. (2019). Der erste Auftritt. Bonn: Beethoven-Haus.
[3] Caeyers, J. (2012). Beethoven. Der einsame Revolutionär. Eine Biographie. Munich: Beck, p. 179.
[4] Junker, C. L. (1791). Noch etwas vom kurköllnischen Orchester, in Musikalische Korrespondenz, p. 380. in: Lockwood, L. (2009). *Beethoven. Seine Musik. Sein Leben.* Kassel: Bärenreiter/Metzler, p. 27; see also the episode from 1791 in: Caeyers, J. (2012). *Beethoven. Der einsame Revolutionär. Eine Biographie.* Munich: Beck, p. 100.
[5] Ruckstuhl, K. (1961). Geschichte der Lese- und Erholungsgesellschaft in Bonn. *Bonner Geschichtsblätter, 15*.
[6] Autograph in the Beethoven-Haus, Sammlung Wegeler W 1; cf. also Wolfshohl, A. (2018). *"Lichtstrahlen der Aufklärung." Die Bonner Lese-Gesellschaft. Geistiger Nährboden für Beethoven und seine Zeitgenossen.* Bonn: Beethoven-Haus, p. 16.
[7] Flörken, N. (2017). Die französischen Jahre in Bonn 1794–1814. Bonn: Kid Verlag.
[8] Wegeler, J. (1839). *Franz Gerhard Wegeler.* Coblenz: Kehr, p. 8.
[9] Wegeler, J. (1839). *Franz Gerhard Wegeler.* Coblenz: Kehr, p. 5 sq.
[10] Source: Lorenz von Breuning an seine Schwester Eleonore, 31. Mai 1796, Beethoven-Hauses Bonn, Sammlung Wegeler, W 123.
[11] Prössler, B. (2008). *Franz Gerhard Wegeler. Ein rheinischer Arzt, Universitätsprofessor, Medizinalbeamter und Freund Beethovens.* Bonn: Beethoven-Haus, p. 14.
[12] BGA 65.
[13] Zenner, H. P. (2002). Wie ein Verbannter muß ich leben, in Deutsches Ärzteblatt, 99: A 2762–2766 [No. 42]; https://www.aerzteblatt.de/archiv/34009/Beethovens-Taubheit-Wie-ein-Verbannter-muss-ich-leben.
[14] BGA 65.
[15] BGA 70.
[16] BGA 70.
[17] Wawruch, A. (April 30, 1842). Aerztlicher Rückblick auf L. van Beethoven's letzte Lebensepoche. (F. Witthauer, ed.) *Wiener Zeitschrift für Kunst, Literatur, Theater und Mode, 86*, p. 681 sqs.
[18] I. e. Giulietta Guicciardi, born presumably 1784, one of his piano pupils, to whom the Moonlight Sonata is dedicated, cf. BGA 70, note 7.
[19] BGA 70.
[20] BGA 106.

[21] Beethoven-Haus Bonn, Sammlung Wegeler, W 126.
[22] BGA 439.
[23] von Hatzfeld, A. (May 31, 1950). Eleonore von Breunings Tagebuch. *General-Anzeiger*.
[24] BGA 439.
[25] Comment on BGA 439.
[26] Stephan von Breuning to Franz Gerhard Wegeler, 11. August 1810; Beethoven-Haus Bonn, Sammlung Wegeler, W 130.
[27] Beethoven-Haus Bonn, Sammlung Wegeler, W 25.
[28] BGA 979.
[29] Wegeler/Ries. (1838). *Biographische Notizen über Ludwig van Beethoven*. Koblenz: Bädeker, p. 48 note 3.
[30] Wegeler/Ries, 1838, p. 45.
[31] BGA 2100.
[32] BGA 210.
[33] BGA 2236.
[34] BGA 2255.
[35] Written by someone else; only the signature is by Beethoven; BGA 2257.
[36] BGA 2257.
[37] Beethoven-Haus Bonn, Sammlung Wegeler, W 26.
[38] von Breuning, G. (1874). *Aus dem Schwarzspanierhaus. Erinnerungen an Ludwig van Beethoven aus meiner Jugendzeit*. Vienna: Rosner.
[39] Wawruch, A. (30.04.1842). Aerztlicher Rückblick auf L. van Beethoven's letzte Lebensepoche. In: Wiener Zeitschrift für Kunst, Literatur, Theater und Mode (ed. by F. Witthauer), vol. 86, p. 681 sqs.
[40] Wiener allgemeine Musik-Zeitung, 13.9.1845.
[41] Ferdinand-Ries-Gesellschaft (ed.). (2012). *Wegeler/Ries: Biographische Notizen über Ludwig van Beethoven, Nachdruck der Ausgabe 1838 mit dem Nachtrag von 1845*. Bonn.

Chapter 4

Beethoven's deafness: psycho-social consequences and resilience

Claudia Spahn

Introduction

In a number of chapters in this volume, the illnesses that accompanied Beethoven as a person and a musician throughout his life are chronicled (cf. chap. 5, 7, 8, 9,). In particular, his deafness is accorded a central position: his pupil Czerny even divided Beethoven's work into several phases dependent on his deafness[1]. The first period up until 1802, in which his hearing was unweakened; the second period, up until 1812, in which his hearing was not impaired at all, only slightly; the third period, from 1812 onwards, in which his hearing gradually grew weaker. Complete deafness, according to Czerny, only set in 1816 or 1817.

In what follows the focus is to be shifted to the psycho-social consequences of Beethoven's deafness, for which the Heiligenstädter Testament (Heiligenstadt Testament) is drawn upon as the most important source.

The Heiligenstadt Testament

With his Heiligenstadt Testament[2] Ludwig van Beethoven left behind an important document, in which he offers us profound insights into how he perceived his increasing deafness and how he suffered from it.

The piece of writing is dated October 6th 1802; at this point in time Beethoven was in the 33rd year of his life. To treat his stomach complaints, he had visited the mineral water springs in

Heiligenstadt near Vienna and during this time lived in a peasant's home somewhat outside of Heiligenstadt. Here he must have written the letter to his brothers Carl and Johann, which he never sent, however. The document was only found 25 years later—after Beethoven's death—in his estate and posthumously published as the "Heiligenstadt Testament." The original is now kept in the Hamburg City Library. It is assumed that what caused him to draft the Testament was the deterioration in his hearing, which Beethoven must already have noticed around six years previously. In a letter dated June 1, 1801 to his Viennese friend Carl Amenda (1771–1836), he wrote that "the most precious part, my hearing, has greatly decreased, even then (…) I felt traces of it, but I concealed it, now it has gotten worse and worse."[3]

Due to its central importance the Heiligenstadt Testament is reproduced here in full:

For my brothers Carl and [Johann] Beethoven.

Oh you men who think or say that I am malevolent, stubborn, or misanthropic, how greatly do you wrong me. You do not know the secret cause which makes me seem that way to you. From childhood on, my heart and soul have been full of the tender feeling of goodwill, and I was even inclined to accomplish great things. But, think that for six years now I have been hopelessly afflicted, made worse by senseless physicians, from year to year deceived with hopes of improvement, finally compelled to face the prospect of a lasting malady (whose cure will take years or, perhaps, be impossible). Though born with a fiery, active temperament, even susceptible to the diversions of society, I was soon compelled to isolate myself, to live life alone. If at times I tried to forget all this, oh how harshly was I flung back by the doubly sad experience of my bad hearing. Yet it was impossible for me to say to people, "Speak louder, shout, for I am deaf." Ah, how could I possibly admit an infirmity in the one sense which ought to be more perfect in me than others, a sense which I once possessed in the highest perfection, a perfection such as few in my profession enjoy or ever have enjoyed. – Oh I cannot do it; therefore forgive me when you see me draw back when I would have gladly mingled with you. My misfortune is doubly painful to me because I am bound to be misunderstood; for me there can be no relaxation with my fellow men, no refined conversations, no mutual exchange of ideas. I must live almost alone, like one who has been banished; I can mix with society only as much as true necessity demands. If I approach near to people a hot terror seizes upon me, and I fear being exposed to the danger that my condition might be noticed. Thus it has been during the last six months which I have spent in the country. By ordering me to spare my hearing as much as possible, my intelligent doctor almost fell in with my own present frame of mind, though sometimes I ran counter to it by yielding to my desire for companionship. But what a humiliation for me when someone standing next to me heard a flute in the distance and I heard nothing, or someone standing next to me heard a shepherd singing and again I heard nothing.

(Second page of the autograph)

Such incidents drove me almost to despair; a little more of that and I would have ended my life – it was only my art that held me back. Ah, it seemed to me impossible to leave the world until I had brought forth all that I felt was within me. So I endured this wretched existence – truly wretched for so susceptible a body, which can be thrown by a sudden change from the best condition to the very worst. – Patience, they say, is what I must now choose for my guide, and I have done so – I hope my determination will remain firm to endure until it pleases the inexorable Parcae to break the thread. Perhaps I shall get better, perhaps not; I am ready. – Forced to become a philosopher already in my twenty-eighth year, – oh it is not easy, and for the artist much more difficult than for anyone else. – Divine One, thou seest my inmost soul, thou knowest that therein dwells the love of mankind and the desire to do good. – Oh fellow men, when at some point you read this, consider then that you have done me an injustice; someone who has had misfortune may console himself to find a similar case to his, who despite all the limitations of Nature nevertheless did everything within his powers to become accepted among worthy artists and men. – You, my brothers Carl and [Johann], as soon as I am dead, if Dr. Schmid is still alive, ask him in my name to describe my malady, and attach this written documentation to his account of my illness so that so far as it be possible at least the world may become reconciled to me after my death. – At the same time, I declare you two to be the heirs to my small fortune (if so it can be called); divide it fairly; bear with and help each other. What injury you have done me you know was long ago forgiven. To you, brother Carl, I give special thanks for the attachment you have shown me of late. It is my wish that you may have a better and freer life than I have had. Recommend virtue to your children; it alone, not money, can make them happy. I speak from experience; this was what upheld me in time of misery. Thanks to it

(Third page of the autograph)

and to my art, I did not end my life by suicide – Farewell and love each other – I thank all my friends, particularly Prince Lichnowsky and Professor Schmid – I would like the instruments from Prince L. to be preserved by one of you, but not to be the cause of strife between you, and as soon as they can serve you a better purpose, then sell them. How happy I shall be if can still be helpful to you in my grave – so be it. – With joy I hasten towards death. – If it comes before I have had the chance to develop all my artistic capacities, it will still be coming too soon despite my harsh fate, and I should probably wish it later – yet even so I should be happy, for would it not free me from a state of endless suffering? – Come when thou wilt, I shall meet thee bravely. – Farewell and do not wholly forget me when I am dead; I deserve this from you, for during my lifetime I was thinking of you often and of ways to make you happy – be so –

Ludwig van Beethoven

Heiglnstadt on 6th *october* 1802

The psychological effects of loss of hearing in the Heiligenstadt Testament

Beethoven describes very precisely the psycho-social effects of his increasing deafness in the Heiligenstadt Testament.

Right at the beginning he writes about the effect of his hearing impairment on the *perception of his person by other people*: it seems they consider him malevolent, stubborn and misanthropic (line 2/3), while by nature he is rather tender, benevolent and energetic (lines 5/6). In another place he writes that only God can know that a love of mankind and the desire to do good resides within him (lines 50–52). Beethoven must have been conscious of how much his deafness has altered his behavior and have suffered greatly under the false perception of his character.

In several places he describes the general *social isolation* to which the deafness has led: his poor hearing has forced him to retreat from others, although he has a fiery and lively temperament and enjoys being with other people (lines 11/13). He spends his life in isolation involuntarily, therefore. Likewise, the attempts to rejoin society has painfully made him aware of the fact that he is cut off from communicating with others due to his poor hearing (lines 14/15).

The rejection of human communication is, moreover, increased by the fear he feels that those around him may notice his hearing problem. He writes at this point "for I am deaf, ah, how could I possibly admit an infirmity **in the one sense** (…), a sense which I once possessed in the highest perfection (…) oh I cannot do it, therefore forgive me when you see me draw back" (lines 16–22).

The word "taub" in its German stem contains the sense of "taub/deaf/doof" and in this language social contempt was long attached to deafness: deaf persons were not just considered to be unable to hear, they were also seen as stupid. One hint of how deafness was regarded in Beethoven's day may be given by the opera "Il matrimonio segreto" by Domenico Cimarosa (1749–1801), which was premiered in Vienna in 1792. Cimarosa, who at the invitation of Emperor Leopold II had worked in Vienna since 1791 as the court composer in succession to Antonio

Salieri, had developed the role of the father "Il signor Geronimo" as comic: the Viennese public was amused by the "faulty hearing" and imbecility of Geronimo, who tries to make up for this in the opera by means of pseudo-authoritarian behavior, though no-one takes him really seriously.

Beethoven likewise feared social contempt on account of his hearing problem, and this all the more so as he was a musician. To this can be added that he – as he writes – possessed especially excellent hearing before the deafness set in. The limitation therefore is all the more painful and causes shame in him that he – precisely because he was a musician – was no longer sufficiently in possession of this important sense. The withdrawal from society has therefore two reasons: on the one hand, because of the directly limited ability to communicate, and on the other hand, from a sense of fear and shame that his suffering might be discovered (lines 28–30). As a result, Beethoven formulates the legendary phrase "I must live almost alone, like one who has been banished" (lines 25/26).

In the Heiligenstadt Testament we can read how much *psychological strain* Beethoven was under due to his hearing difficulties. He describes his deafness as a continuous evil, whose cure and methods of treatment are unclear (cf. chap. 2). Hoping to improve his condition, he is dependent upon the doctors' promises and their treatment methods (lines 8–9). The patience demanded of him is very difficult for him as an artist to find. He was unstable, inhabited a nervous body and was subject to severe mood swings. At one point he speaks of suicidal thoughts: "But what a humiliation for me when someone standing next to me heard a flute in the distance and **I heard nothing**, or someone standing next to me heard a **shepherd singing** and again I heard nothing. Such incidents drove me almost to despair; a little more of that and I would have ended my life …" (lines 34–39). Beethoven concludes his Testament by stating that he is rushing joyously towards death, "for would it not free me from a state of endless suffering? – Come when thou wilt, I shall meet thee bravely" (lines 81–83).

Psycho-social aspects of deafness from a modern perspective

Beethoven himself expressed the wish to his brothers in the Testament that his doctor Professor Schmid write about his disease and that his descriptions in the Heiligenstadt Testament of how he had suffered from this illness may also come to the attention of posterity.

The psycho-social effects of his deafness as he describes them read even today like extracts from a current textbook on this theme.

Even though knowledge of the psychology of hearing has increased immensely since Beethoven's day (cf. chap. 6), the technical development of hearing aids has clearly advanced (cf. chap. 8) and treatment through cochlea implants have become possible (cf. chap. 9), and even though inclusion is taken seriously in modern-day society, the psychological and social issues affecting the deaf so impressively described by Beethoven remain valid today in their essence. The impeded participation in communication with normal hearing persons leads to a higher degree of continuous psychological strain. In an investigation of hard of hearing persons aged around thirty, the author Jörg Schwöppe reaches the conclusion that the physical limitation in hearing becomes a social handicap that encompasses the whole personality, on account of the impairment in communication in interaction with the behavior of those around one. People hard of hearing therefore frequently experience uncertainty even today, and are under psychological strain.[4]

This holds true especially for musicians.[5] In our musicians'-medicine clinical hours, we encounter patients with hearing impairment who are limited in exercising their profession, placing great strain on them mentally.[6] Similar to Beethoven, these musicians still fear today negative social consequences resulting from their disease and take care that their deafness is not known in public.

Beethoven's handling of disease – use of resources and resilience

In view of the limits and strains under which Beethoven suffered during his lifetime – and these include, besides the loss of his hearing, constant abdominal colics, headaches and at the end of his life, the symptoms of liver cirrhosis – one may well ask from where he drew the energy for his wide-ranging activity as a pianist and composer. On this subject, too, he expressed himself convincingly in the Heiligenstadt Testament: "… it was only my art that held me back. Ah, it seemed to me impossible to leave the world until I had brought forth all that I felt was within me" (lines 28/29) and at another place he writes to his brothers: "Recommend **virtue** to your children; it alone, not money, can make them happy. I speak from experience; this was what upheld me in time of misery. Thanks to it and to my art, I did not end my life by suicide" (lines 46–51).

It is a very impressive and moving revelation that Beethoven offers here in the Heiligenstadt Testament, showing us clearly what immense power must have emanated for him from the music and in particular from his musical creativity and the enormous drive to create.

In many letters to his friends we find reports of frequent ailments and phases of illnesses which time and again literally laid him low, as the example of the following letter excerpt to Breitkopf & Härtel in Leipzig of January 2, 1810 shows: "Barely recovered – my illness laid me low once again for 2 weeks – it's a miracle – we haven't even got any decent enjoyable bread – […] – for today I am too weak to reply to your pleasant note, yet in a few days [will write] about everything else in your letter."[7]

In view of the severe restrictions on his health, his overall achievement as a musician and composer is all the more to be honored. The mental power to be able to "pick himself up" was obviously a pronounced feature of Beethoven, which reveals a strong personal dimension to him, alongside the tragical suffering that accompanied him over many years.

In this context, the term resilience has shifted to centre stage in health psychology over the past two decades.[8] It derives from

the Latin work *resilire*, "to rebound, to jump back," and is used in material technology to describe the quality of a material to reassume its original form after impact from without. In its psychological meaning, resilience describes the mental capacity for resistance on the part of a person towards stressful life situations and special events in life.

If it concerns specifically how one handles diseases, then we speak of "coping." Under positive coping, we understand today a form of dealing with a disease which does not deny the consequences of an illness and with which the person concerned remains emotionally capable of action.[9]

People with well-developed resilience are able, despite adverse conditions, to remain active and to hold on to inner values. They keep their chin up, so to speak, and possess strong internal and external resources on which they can draw. One of the most important external resources is social support.

In the Heiligenstadt Testament Beethoven names art as the most important resource that keeps him from committing suicide. In a letter dated November 16, 1801 to his friend from his youthful days in Bonn, Wegeler, he even writes that he wants to "grasp fate by the throat, it certainly was not going to completely overcome him."[10]

Other composers, too—examples to be mentioned are Mozart and Schubert, who both died early, and Smetana, who likewise went deaf (cf. chap. 2)—have left behind a large and important body of work despite frequent periods of illness.

Franz Schubert (1797–1828), in particular, who knew and revered Beethoven, must also have possessed great strength in view of his difficult circumstances. Concerning Schubert's amazing resilience, Alfred Hrdlicka wrote: "[…] How could a man compose so coolly under such adverse conditions? He only got his own piano very late, the narrow space, the noise etc. etc. […] this "Romantic" Schubert must have had an iron will that we can only envy."[11]

Schubert and Beethoven were close not only in this regard. In 1822, Schubert dedicated to Beethoven, as his "worshipper and admirer," the variations on a French song for pianoforte for

four hands, Op. 10. Besides, he was one of the torch-bearers at Beethoven's funeral.

Even though similarities can be found between Beethoven and other composers regarding the resilient way of handling adversity, Beethoven surely differs significantly in one point: due to his deafness and the associated social isolation, he had to go without social support as one of the most important resources for long periods of his life.

Conclusion

The Heiligenstadt Test from 1802, which Beethoven directed to his two brothers, yet never sent during his lifetime, offers deep insight into the heavy psycho-social consequences of his deafness. He felt misjudged by those around him, withdrew from social life and lived in fear that his deafness could be discovered. His desperation led to thoughts of suicide. His strongest resource was the music and the creative drive to be able to leave to posterity as much as possible of what he contained within him in terms of composition. This gave him the power to carry on composing, despite all the suffering arising from his ill health. Seen from this perspective, Beethoven seems to us to be not only a man marked by diseases, but also one of great resilience.

Adnotations

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[2] Beethoven, Heiligenstädter Testament, facsimile, publication of the Internationalen Musiker-Brief-Archiv, Verlag Ludwig Doblinger, Vienna – Munich, 3rd edition 1975.

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[10] Beethoven to Franz Gerhard Wegeler in Bonn, Vienna, November 16, 1801 (BGA 70). Beethoven-Haus Bonn, Sammlung Wegeler, W 18.
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Chapter 5

Ludwig van Beethoven: What Effect Could His Chronic Illnesses Have Had on His Compositions?

Christian P. Strassburg

When we consider Ludwig van Beethoven's health problems, the fact that he began to lose his hearing as early as 1796, at the age of 26, attracts particular attention. The apparent contradiction of an art form perceived by the ear being composed by a person who no longer has auditory sensory perception seems highly noteworthy. Presumably this is because people without musical training cannot imagine truly experiencing a specific piece of music except by perceiving the actual production of the sound that constitutes that music. However, the hallmark of high musical talent is the ability to imagine a piece of music without actual sounds being produced—a sort of auditory imagination (cf. chap. 2).

What is often overlooked in the detailed study of the sense of hearing and music in Beethoven's case are his severe and decades-long disorders of the digestive tract and liver, which ultimately led to his death and very probably had a major influence on his life and, presumably, on his creative work.

End-of-life findings: Beethoven's autopsy results

If we read the autopsy report of March 27, 1827, it becomes clear that at the time of his death Beethoven was a severely ill man with diseases in multiple organ systems. Excerpts of the report, originally written in Latin, state the following:

"The corpse was very emaciated and covered with black petechiae, especially on the limbs; the abdomen was distended and strained with dropsy …

The chest cavity and its viscera were in normal condition.

Four measures of greyish-brown turbid fluid were present in the abdominal cavity. The liver appeared to be shrunken to half its volume, leathery, firm, greenish-blue in color, and interspersed with bean-sized nodules on its bumpy surface and substance; all its vessels were very narrow, thickened, and bloodless.

The gallbladder contained a dark-brown liquid in addition to frequent, grainy deposits. The spleen was found to be more than twice its usual size, black in color, tough; the pancreas also appeared larger and firmer; its excretory duct was the width of a goose-feather quill. The stomach, including the intestines, was very much distended by air.

Both kidneys were wrapped in an inch-thick layer of cells soaked with cloudy brown fluid, their tissue pale red and loosened.

Doctor Johann Wagner, Adjunct Professor at the Pathological Institute (in the presence of Professor Dr. Ignaz Andreas Wawruch), March 27, 1827."[1]

From a medical/nosological perspective, the information contained in this description points to a number of possible diseases and resulting conditions which, when combined, allow for inference of a long, chronic disease process.

In detail, the following internal hepatogastroenterological diseases can be derived from the report:

- An emaciated body is described, which corresponds to a cachectic habitus that is the consequence of a catabolic nutritional situation. This is to be expected in advanced liver diseases, but also in chronic diseases of the pancreas.
- Consistent with the emaciated limbs, dropsy was evident. According to the text, this comprised "4 measures" of liquid, corresponding to a high degree of ascites.
- This liquid is described as brownish and turbid. Cloudy liquid in the abdominal cavity corresponds to a typical quality

of abdominal fluid in bacterial peritonitis. This means that peritonitis may have been present at the time of death.

- The cause of the ascites can be directly derived from the description of the liver, which is described as leather-hard, small and nodular. This is the classic description of cirrhosis of the liver. The development of ascites in liver cirrhosis is caused by an increase in the pressure of the abdominal vessels, or portal hypertension. Its trademark is enlargement of the spleen, which in Beethoven is presented as severely enlarged. In summary, these are the classic findings of portal vein hypertension in liver cirrhosis with the formation of abdominal fluid and infection of the abdominal cavity as bacterial peritonitis.
- The report also mentions black petechiae. Petechiae are places where blood has seeped into the skin, indicating that blood clotting is limited. Decreased blood clotting, which depends on the production of clotting factors in the liver, is a sign of advanced liver cirrhosis with functional liver failure.
- However, there is further evidence: the report describes grit in the gallbladder, which indicates that he suffered from gallstones (cholelithiasis).
- In addition, the pancreas is described as tough, with a large duct; these two factors correspond to findings of chronic pancreatitis.
- Additional evidence includes loose, pale kidneys surrounded by a layer soaked in liquid. This description can be consistent with acute kidney failure. Here, too, we can assume a connection with the established cirrhosis of the liver, given that both peritonitis and the movement of water in the course of abdominal dropsy can lead to acute kidney injury (AKI / hepatorenal syndrome).

From the perspective of internal medicine and gastroenterology, this finding suggests that Ludwig van Beethoven died of decompensated cirrhosis of the liver with ascites, kidney failure, and bacterial peritonitis,[2] while also suffering from gallstone disease and chronic pancreatitis. Interestingly, the autopsy records no abnormalities in the chest cavity, which means the hypothesis of a pulmonary infection as one of the causes of death seems im-

probable. According to this description, heart failure (of which Ludwig van Beethoven's father died) also seems unlikely, as no expansion of the heart cavities or similar symptom is mentioned.

The findings of the autopsy therefore indicate that many years of chronic disease processes may have played a role in the life of Ludwig van Beethoven and it is almost certain that they influenced his life and work.

Personal and familial medical history

Ludwig van Beethoven was born in 1770 as one of seven children (three of whom survived to adulthood) in a Low-German family of artists descended from a 17th-century wine-merchant family from Antwerp.[3] His grandfather was *Kapellmeister* at the court of the Archbishop Elector of Cologne and his paternal grandmother suffered from alcoholism and was sent to a cloister for her "drinking problem." Her son Johann, a tenor in the court chapel choir, lost his position in 1789 because of drunkenness. His father, Johann van Beethoven, was also an alcoholic and died of heart failure. Ludwig van Beethoven's mother died of tuberculosis, while her mother suffered from a "nervous condition." Ludwig van Beethoven's family history shows a predisposition to alcoholism in several generations.

Beginning as early as age 26, there are signs and descriptions of digestive complaints. The notes of his friend and doctor Franz Gerhard Wegeler state: "*He only wrote the Rondo of his first concerto (C major) in the afternoon two days before the performance, and with quite severe colic pains, from which he frequently suffered. I helped him as much as I could with small remedies.*"[4]

Beethoven himself wrote on November 16, 1801: "… *my lower abdomen is doing better, especially when I use the tepid bath for some days, I do quite well for eight or even ten days, very occasionally something fortifying for my stomach, I shall start with the herbs on my belly now as you advise.* …"[5].

This indicates that Beethoven suffered from chronic abdominal pains. Between 1802 and 1808, there are repeated descriptions of colic, stomach cramps, and backaches. Beethoven mainly relied on tavern food and it has been recorded that his favorite food was macaroni and cheese. It is noteworthy that his description of stomach complaints beginning in 1801 took up more space than his references to progressive hearing loss. Between 1802 and 1808, he tried various baths and curative drinks and tried to avoid food that was difficult to digest (fatty food). Beethoven regularly ate large amounts of bread soup and fish, but also, as already mentioned, macaroni and cheese. In 1811 and 1812, he visited the spas of Bohemia and in 1816 he fell ill with a severe fever and was in bed for weeks.

Taken all together, these symptoms raise the possibility of various illnesses. In principle, digestive problems of the kind described here can indicate a chronic, inflammatory intestinal disorder, such as colitis ulcerosa or Crohn's disease. This would be a good explanation for the bouts of diarrhea. On the other hand, the autopsy report contains evidence of gallstones and Beethoven's letters refer to backaches in connection with the digestive symptoms. This can be the cause of chronic recurrent pancreatitis, which can also lead to fat intolerance. Beethoven reported that he regularly smoked tobacco and drank about a bottle of wine every day, which would also have adverse effects on pancreatitis. Another alternative would be a functional intestinal disorder, which today is referred to as irritable bowel syndrome and can lead to the symptoms in question.

Altogether, these symptoms severely weakened Ludwig van Beethoven and led him to contact many doctors, including the most famous medical practitioners of the day (cf. chap. 2).

The descriptions show that patient interactions were difficult. Beethoven is characterized as an unpredictable and unmanageable patient. From the perspective of his doctors, Beethoven as a patient was resistant to medical recommendations. Anton Schindler wrote: "– *That was the kind of patient Beethoven was, when he was capable of movement; somewhat dangerous to the doctor involved, because taking medicine contrary to the directions not infrequently reverses the intended effects*

and he [the doctor] was blamed for the consequences. …, the patient did as he pleased did not allow instructions of any kind to limit his free use of the medicine bottles or of his person. Absolute freedom in all he did in any direction, even if accompanied by whining and wailing, …"[6]

Onset of symptoms of liver disease and worsening health

On November 12, 1821 Beethoven wrote to Franz Brentano: "*Since last year I've been constantly ill, and over the summer I was afflicted with jaundice; that lasted until the end of August. In September I had to go to Baden on Staudenheim's orders. Because it soon grew cold in that area, I was stricken with such severe diarrhea that I could not bear the treatment anymore and had to flee back here. …"*[7] And on July 18 of the same year, he wrote to Archduke Rudolph: "*…, finally developed full-fledged jaundice, a disease I find most disgusting. …"*[8]

It is evident here that Beethoven was experiencing a marked deterioration of his health. Despite this, he managed to complete the Piano Sonata Op. 110 and, in 1823, the Ninth Symphony and *Missa solemnis*. Subjectively, however, Beethoven had the impression that he was no longer as productive as he had been.

On July 1, 1823, Ludwig van Beethoven wrote to Archduke Rudolph: "*Since Your Imperial Highness's departure, I have mostly been ill; indeed, I was most recently afflicted by severe eye pain, which has only improved to the extent that I have been able to use my eyes again for the past eight days, but only sparingly. … My eyes tell me to finish.*"[9] During the same period, Beethoven wrote to an unknown addressee in July: "*I am doing very poorly, severe diarrhea today.*"

Here Beethoven once again describes episodes of his diarrhea problem, a case of jaundice that has occurred in the meantime, and effects on his eyes. In this context, the portrait painted by Georg Ferdinand Waldmüller in 1823 is interesting; the impres-

sion can be gained from it that Beethoven's sclera are portrayed as subicteric, at a minimum.

From the perspective of internal medicine, the symptoms documented in texts from that time indicate various possibilities:

On the one hand, the combination of iridocyclitis (inflammation of the eye) with diarrhea is consistent with a chronic inflammatory bowel disease such as ulcerative colitis. Intestinal infections are another possibility, but this raises the question of why these symptoms had been a persistent problem of Beethoven's since his twenties.

The combination of infection, jaundice and diarrhea suggests yet another suspected diagnosis. Primary sclerosing cholangitis (PSC) is a chronic immune-mediated disease which, in men, often combines ulcerative colitis and scarring of the bile ducts with sporadic development of jaundice.[10] This can lead to bacterial infections with jaundice and diarrhea. This disease is also capable of causing cirrhosis of the liver. In many cases, patients with primary sclerosing cholangitis also suffer from stones, which was evident from Beethoven's autopsy findings. Beethoven was treated during this time by Dr. Anton Braunhofer, Dr. Smetana and Dr. Jacob von Staudenheim. As early as 1817, Staudenheim forbade him to drink alcohol, a piece of advice Beethoven did not follow. It is highly probable that alcohol consumption was a causal factor in his cirrhosis of the liver.

According to reports, his health continued to deteriorate rapidly from 1823 onwards. In 1825, he began vomiting blood and developed a propensity to bleed. Once again, he was forbidden to drink alcohol, this time expressly by Braunhofer. On May 13, 1825, Beethoven wrote to Braunhofer: "*My catarrhal condition manifests itself here as follows: I spew a lot of blood, probably only from the windpipe, but often from the nose. … But that my stomach is terribly weakened and my whole nature suffers from this, there is no doubt …*".

As the petechial hemorrhages at the time of the autopsy suggest, there has obviously been a deterioration in the blood's ability to coagulate, and possibly a drop in the blood platelet count. Both are possible consequences of advanced liver disease with

portal hypertension, enlargement of the spleen, which contributes to a drop in the platelet count in the blood, and decreased synthesis of blood clotting proteins by the damaged liver. It is not possible to determine from the description whether this was actually blood from a varicose vein or a different kind of bleeding from the upper digestive tract, but given the findings of an enlarged spleen and cirrhosis at the autopsy two years later, this can be assumed as very likely. The advanced liver cirrhosis is ultimately confirmed by the development of ascites in 1826. On December 20, 1826, Dr. Johann Seibert performed a drainage of abdominal fluids. Beethoven wrote to Johann Andreas Stumpff in early 1827: "*Unfortunately, since December 31, I have been laid low by dropsy. You can imagine what kind of a state I'm in!*"[11] In Beethoven's conversation books, there is a note that he developed an infection (erysipelas) at the site where the fluids were drained. There was no expert medical training for this situation in the early 19th century, and no mention of special treatment for the severely ill Beethoven is recorded.

Altogether, there were additional drainages of the ascites on January 8, February 2, and February 27. According to the records, up to 14 L (second session) of fluid was released each time. Because there was no knowledge during Beethoven's time of how to treat portal vein hypertension or the need to regulate liquid and stabilize kidney function, it cannot be assumed that the necessary liquid substitution took place, so this procedure led to a dangerous decrease in kidney function (acute kidney failure /AKI, hepatorenal syndrome).[12]

To summarize, regardless of the etiology of the liver disease, in which the documented clinical and anamnestic evidence points to alcoholic cirrhosis, an advanced decompensation of liver cirrhosis is present at this time, which cannot be survived without modern medical interventions, including organ transplantation.

The influence of chronic liver disease and decompensation on cognitive ability

In historical retrospect, it is not easy to judge the effects of liver disease on cognitive ability. However, Ludwig van Beethoven showed many direct and indirect signs of so-called hepatic encephalopathy. Hepatic encephalopathy is caused by the liver's inability to remove sufficient toxins from the blood and therefore from the body. Clinically, this leads to various neurological symptoms. These include memory disorders, low energy, personality changes, and loss of fine motor skills. Particularly noticeable here is a change in handwriting, which in the everyday clinical practice of modern medicine is tested through a writing sample or a so-called number connection test (illustration 1 A-C). Mood swings, perseveration, and many other symptoms may also occur (illustration 2). Encephalopathy has a significantly damaging effect on a person's cognitive ability.

Indications that Ludwig van Beethoven suffered from encephalopathy can be found by comparing handwriting samples from different phases of his life. Examining his handwriting around 1800 and then around 1820 or on March 23, 1827, three days before his death, the later handwriting points to a manifest encephalopathy by 1820 at the latest, presumably intermittent (illustration 1 A-C). The letter presumably written on January 11, 1827 (illustration 1 C) also shows a change that is very consistent with encephalopathy.

Furthermore, Bettina von Arnim reports that "*He rarely picked anything up without it falling or breaking.*" And elsewhere, "*He often threw the inkwell into the piano.*"[13] She described a visit to his apartment as follows: "*His apartment is very strange: in the first room two or three pianos, all of them legless and lying on the ground, trunks with his things in them, a stool with three legs, in the second room his bed, which consists of a straw sack and a thin blanket in winter as well as summer, a basin on a table of fir wood, his nightclothes are lying on the floor; here we waited a good half hour, because he was shaving.*"[14]

And Beethoven writes in early 1827 to Johann Andreas

Stumpff: "*Usually I live off the profits from my intellectual work … Unfortunately, for two and a half months, I've been in no condition to write a note …*"[15] The behavior evident here is, in principle, consistent with hepatic encephalopathy. Beethoven seems to have perceived this himself and it appears to have had an influence on his artistic work. Alternatively, and in addition to hepatic encephalopathy resulting from advanced liver cirrhosis, personality changes caused by regular abuse of alcohol with addictive behavior can play a role (cf. chap. 4).

Beethoven himself describes his dependency on profits from his mental achievements. So it is possible that chronic liver disease with the consequences described above also had an influence on his ability to compose, as well as the type of composition he produced. Beethoven's music is characterized by contrasts in volume that are often sudden, and by outbursts, perseverations (illustration 2) and abrupt changes to the melodic lines or meter. All this could just be a brilliant use of compositional tools, but it is possible that this brilliance was influenced by hepatic encephalopathy. At any rate, handwriting samples and descriptions of his behavior indicate that this diagnosis and its influence on the late compositions by the master are highly probable.

Beethoven's death and a speculation

The last ascites drainage was performed on Ludwig van Beethoven on February 27, 1827. On February 20, 1827, Beethoven wrote to his publisher B. Schott and Sons in Mainz: "*And so, the sooner I get this Rhine or Mosel wine, the more good it can do me in my current condition.*"[16] His doctors' urgent order to abstain from alcohol was still being ignored.

On March 8, 1827, the publisher did indeed send the composer 12 bottles of Rüdesheimer Berg, vintage 1806 as well as a healing herbal wine. This indicates that he did not have or perceive an understanding of the danger his doctors had made clear to him, despite the obvious exacerbation of his life-threatening

condition.[17] His frequent changes of address and doctor also indicate that Beethoven was neither willing nor in a position to cooperate constructively on his healing or stabilization.

The wine delivery actually reached Beethoven on March 24, 1827, just as he was slipping into the final hepatic coma from which he died on March 26, 1827 at 5:45 PM.

19th century methods did not offer any possibilities for positively influencing the disease at that point (cf. chap. 2). Using 21st century methods, the only way to improve the condition in which he found himself in 1827 would be an organ transplant.[18] According to the guidelines of the German Medical Association (Bundeärztekammer) in § 16 of the German Transplantation Act (TPG), liver transplants require monitoring of the patient's addictive behavior, including therapy, observation of a waiting period, and the patient being willing and able to adhere to agreed treatments.[19] According to the guidelines of the German Medical Association, the final decision is made by an interdisciplinary transplantation conference, which evaluates these points from a neutral perspective.

If it were possible to transport Ludwig van Beethoven's illness into the present day and have it evaluated by an interdisciplinary transplantation conference according to the rules for liver transplantation and the information outlined above, he would not be admitted to the waiting list for an organ transplant.[20] Of course, this is also a hypothetical conclusion based on historical information, which might be different today due to the possibilities of therapeutic intervention. But it also clarifies the dynamics of chronic liver disease caused by alcohol and its ethical and medical challenges for doctors working in transplantation and hepatogastroenterology.

In sum, Beethoven's cause of death—based on the available information from his own writings and written accounts of him, including his autopsy report—was a hepatic coma with decompensated cirrhosis of the liver. It is entirely possible that in addition to alcoholic liver cirrhosis, which appears likely from both his alcohol consumption and his family history, chronic inflammatory bowel disease and primary sclerosing cholangitis may also have been involved in the disease process. The alcoholic

disease can explain the pancreatic findings of chronic pancreatitis, which can also be explained by the gallstones.

In the end, Ludwig van Beethoven must have profited little from the drainage of ascites performed by his doctors. Under the conditions of the time, they would have been carried out in unsterile conditions, without professional after-care or nursing support. The report of a local infection at the drainage point indicates that the peritonitis may have been triggered by the puncture. Peritonitis with decompensated liver cirrhosis then leads to multiple organ failure and death. In light of Ludwig van Beethoven's statements, it is unquestionable that his intestinal difficulties and ultimately the symptoms of his progressive liver failure had a significant impact on his quality of life, ability to work, and exercise of his creative powers.

Adnotations

[1] Hans Bankl. *Woran sie wirklich starben. Krankheiten und Tod historischer Persönlichkeiten.* 5th edition, Verlag Wilhelm Maudrich 2005 pp. 40–43.

[2] C. P. Strassburg "Präoperative Risikoeinschätzung hepatobiliärer Begleiterkrankungen" in Schwenk W, Freys SM, Kalff JC: *Perioperative Medizin*. Thieme Verlag 2017, pp. 54–67.

[3] Otte A, Wink K Kerners *Krankheiten großer Musiker. Die Neubearbeitung*. 6th edition, Schattauer Verlag 2008, p. 84 sqs.

[4] Bankl H, Jesserer H, *Die Krankheiten Ludwig van Beethovens. Pathographie seines Lebens und Pathologie seines Leidens.* Verlag Maudrich 1987, p. 10.

[5] Letter to Wegeler November 16, 1801.

[6] Bankl H, Jesserer H, *Die Krankheiten Ludwig van Beethovens. Pathographie seines Lebens und Pathologie seines Leidens*. Verlag Maudrich 1987, p. 82.

[7] Beethoven Briefe, xx.

[8] Beethoven Briefe, xx.

[9] Beethoven Briefe, xx.

[10] Strassburg et al.: "Autoimmune Lebererkrankungen (AILE)." Deutsche Gesellschaft für Gastroenterologie, Verdauungs- und Stoffwechselkrankheiten (DGVS). Status as of February 2017. Accessed 3/22/2018.

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[12] de Franchis R; Baveno VI Faculty. "Expanding consensus in portal hypertension: Report of the Baveno VI Consensus Workshop: Stratifying risk and individualizing care for portal hypertension." J Hepatol. 2015 Sep; 63(3):743–52.
[13] Otte A, Wink K Kerners *Krankheiten großer Musiker. Die Neubearbeitung*. 6th edition, Schattauer Verlag 2008, p. 104.
[14] xx.
[15] Beethoven Briefe, xx.
[16] Beethoven Briefe, xx.
[17] Strassburg CP, Daute-Weiser D SUCHT 2018, 64, pp. 157–164.
[18] Strassburg CP. "Patient selection and indications for liver transplantation." Chirurg. 2013 May; 84(5):363–71.
[19] Guidelines for organ transplantation as per § 16 TPG for placement on waiting list and organ allocation for liver transplantation. www.bundesaerztekammer.de/fileadmin/user_upload/downloads/pdf-Ordner/RL/RiliOrgaWlOvLeberTx20190924.pdf.
[20] Gottlieb J, Gwinner W, Strassburg CP. "Allocation systems in transplantation medicine: Advantages and disadvantages." Internist (Berl). 2016 Jan; 57(1):15–24.

Image captions

Illustrations:

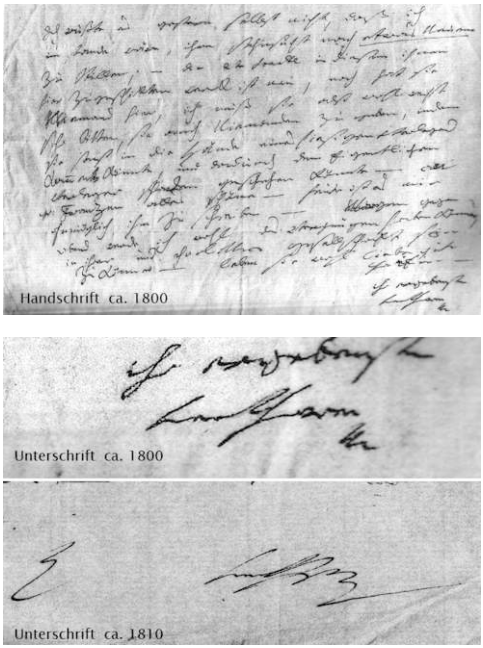
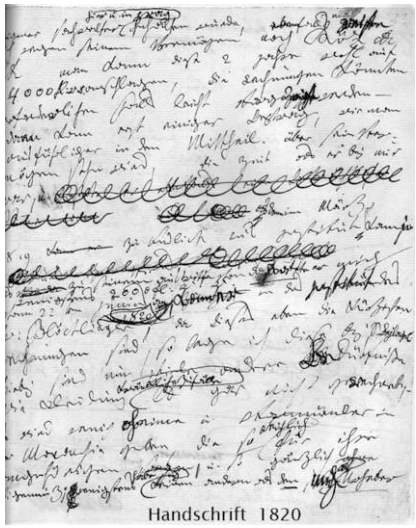


Illustration 1A: letter from Ludwig van Beethoven to Josephine Deym ca. 1800 (Beethoven Haus 1986)



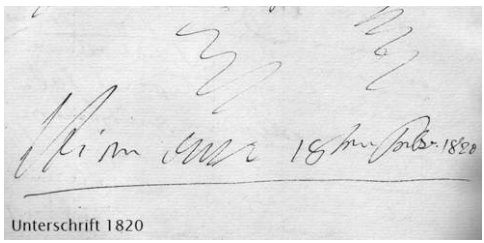
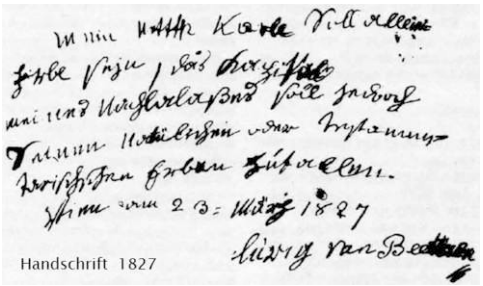


Illustration 1B: Draft of a memorandum to the Court of Appeal in Vienna 1820 (Beethoven Haus Bonn)



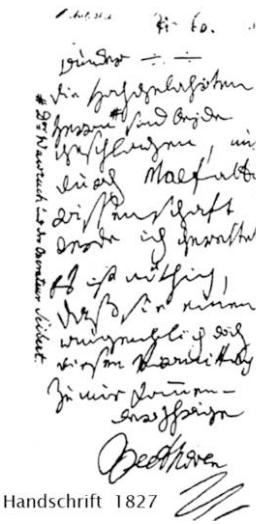
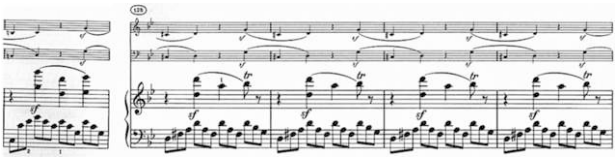


Illustration 1 C: Handwritten testament March 23, 1827 3 days before Beethoven's death and handwritten text presumably to Schindler, 1827 (illustrations 25 and 27 come from Bankl H, Jesserer H, *Die Krankheiten Ludwig van Beethovens. Pathographie seines Lebens und Pathologie seines Leidens*. Verlag Maudrich 1987)

Illustration 2



Measures 124–129 from the first movement of the Piano Trio Op. 97 show the notable fivefold repetition of the motif G – C sharp – D (violin part) as a kind of motivic perseveration. At this point in the piece, the repetition of the three-note motif creates a musical impression of stasis and the melodic flow loses a sense of direction. For the most part, this is probably a stylistic feature of Beethoven's compositions, but from a medical point of view it could be a possible symptom of hepatic encephalopathy.

Beethoven –
Focus on hearing

Chapter 6

How does hearing work?
The physiology of listening

Tobias Moser

"Those who cannot see are cut off from things, while those who cannot hear are cut off from people." This saying is attributed to Immanuel Kant (1724–1804).

Beethoven described the social isolation stemming from his hearing impairment in his own words in the Heiligenstadt Testament of 1802. (Cf. Chapter 4).

The ear's extraordinary capacity for analyzing sound is one of the essential prerequisites for understanding language. Communicating emotions through the sense of hearing—for example, through music or the human singing voice—is of direct importance, too.

But how does hearing actually work?

Sound, i. e. the vibrations in the air around us that are audible to us, comes into contact with the outer ear, finds its way through the ear canal and causes the tympanic membrane, a delicate yet firm membrane, to vibrate. Moving along with it are the tiny auditory ossicles, the smallest bones in our body, in the middle ear. They transmit the vibrations to the fluid-filled cochlea in the inner ear.

The transmission of sound to the inner ear is also known by the specialist term "sound conduction." There are two different ways for sound waves to reach the inner ear: one is called air conduction. The series of ossicles consisting of malleus ("hammer"), incus ("anvil"), and stapes ("stirrup") is connected to the tympanic membrane on one end (by the handle of the mal-

leus) and to the entrance to the inner ear in the oval window on the other end (by the base of the stapes). Through them, vibrations are transmitted to the fluid within the inner ear. Alternatively, sound can be conveyed directly through the bodily tissues and bones to the cochlea. These sound events transmitted through vibration are called "bone conduction" hearing.

Acoustics, the science of sound and one of the oldest experimental sciences, has over 2,000 years of history behind it. However, had an understanding of how the ear captures and processes sound been developed by Beethoven's time? There is not a clear "yes" or "no" answer to this question, since some information about the anatomy of the ear was already known[1]: in ancient times, Hippocrates (ca. 460–370 BCE) had already discovered the tympanic membrane. Eristratos (ca. 300–240 BCE) first mentioned the auditory nerve and Galen (CE 129–199) recognized that sensory impressions were transmitted through nerves. At the beginning of the modern era, detailed descriptions were made of the organ of hearing: Andreas Vesalius (1514–1564) described the middle ear with its malleus and incus, while Giovanni Filippo Ingrassia (1510–1580) completed a study of the stapes, Bartolomeo Eustachio (1520–1574) described the auditory (or Eustachian) tube, and Gabriele Falloppia (1523–1562) gave names to the cochlea and the labyrinth. During the Enlightenment, Antonio Scarpa (1752–1832) described the labyrinth as we know it today in 1772 and Philipp Friedrich Theodor Meckel (1756–1803) showed in his 1777 dissertation that the cochlea is filled with fluid rather than air.

That was the extent of knowledge about the anatomy and physiology of hearing during Beethoven's lifetime.

A basic description of what the inside of the cochlea looks like and how exactly the organ of hearing is constructed was first provided a quarter century after Beethoven's death by Alfonso Corti (1822–1876) and Ernst Reißner (1824–1878). In other words, in Beethoven's time there was not yet a scientifically grounded concept of how the ear works and therefore no clear ideas about the physiology of hearing or a theory of hearing.

In 1861, the Viennese otologist Adam Politzer (1835–1920)

demonstrated that the ossicles vibrate depending on the vibrations of sound waves. The first diagnostic hearing tests using tuning forks, which were differentiated over time from the procedures of tonal and speech audiometry, were developed starting in the second half of the 19th century (cf. chapter 7).[2] The scientific investigations of Hermann von Helmholtz (1821–1894) were foundational for formulating the theory of hearing, which he published in his book *On the Sensations of Tone as a Physiological Basis for the Theory of Music* in 1863.[3]

György von Békésy (1999–1972) modeled the travelling-wave movements of the basilar membrane of the inner ear in 1928, more than 100 years after Beethoven's death. He won the Nobel Prize in Physiology or Medicine in 1961 for his groundbreaking research. Starting with electrophysiological measurements in the 1930s, our current understanding of the hearing process was formed in the 20th and 21st centuries through genetics, anatomy and physiology.[4] Highlights of these discoveries are the detection of cochlear amplification on the molecular, cellular and organ level, the identification of genes for deafness, and the molecular anatomy and physiology of the hair cells.

What do we know today about how our hearing organ works?

Let's ride a travelling sound wave into the wonderful world of the cochlea: to put it simply, we can imagine it as a spiral staircase. Each step corresponds to a frequency, from high-pitched sounds at the base to low ones at the apex. A step is touched when the travelling wave reaches its maximum amplitude at precisely that point. Several travelling waves for different pitches are usually formed simultaneously. Imagine the travelling wave as a jump rope that you move with a quick snap of your hand so that a continuous wave forms towards the loose end.

In the cochlea, the rope is a membrane with tiny sensory cells sitting on it. Because they hold a so-called hair bundle on their

upper end—a kind of cell protrusion—that is moved by the vibrations, they are called hair cells.

When the wave moves the hair cell, the movements of the hair bundles cause the protein strands stretched between the tips of the hairs to brush against tiny protein pores that allow electrically charged particles to flow into the sensory cell. The strand only needs to move a billionth of a meter to set off a hearing impression!

But why do the charged particles flow into the cell and what happens after that?

Mother Nature has arranged that ingeniously, too. The energy for the hair cell's refined conversion of a mechanical stimulus into an electrical signal comes from a battery.

A battery in your ear? In the outer wall of the cochlea, a tissue that is particularly well supplied with blood—called the "stria vascularis"—ensures that the battery gets charged. This means the hair cells need hardly concern themselves with the energy required for hearing. In fact, there is not much of a blood supply near the hair cells that could deliver energy to those cells!

And that makes sense … or are you hearing your pulse right now?

So there's a division of labor in the ear: the hair cells make hearing happen, but the hard work of energy production is done by others.

And now it gets really exciting because we're dealing with the hair cells, our sensory cells in the ear. We have two kinds of hair cells: the inner hair cells along the inside of the spiral staircase, of which we have *one* row, and the outer hair cells along the outer edge of the spiral staircase, of which we have *three* rows.

So what do the outer hair cells do?

When the pores open on the hair bundle and the inflow of electrically charged particles stimulates the cell, it contracts, amplifying the vibrations of the travelling wave.

But how does it work?

Picture this: in the coating around the side of these cylindrical cells, there is a large number of protein bodies that behave like the quartz crystal in your watch. If the electric voltage changes over the coating of the cells, they contract and then expand

again. Since many, many copies of this "motor protein" known as "prestin" (from ital. presto = fast) do the same thing in a row, it leads to changes of billionths of a meter in cell length. Because each of the outer hair cells above and below is anchored to the membranes of the cochlea, this decrease in length introduces more energy into the system: the vibrations are amplified!

Interestingly, this amplification also leads to sound radiation from the ear, which ENT doctors can measure by placing a sensitive microphone in the ear canal to get an idea of how well the outer hair cells are working. Because these instances of sound radiation are generated by the ear, they are termed "otoacoustic emissions" (OAE).[5] We also use OAEs to test hearing in newborn babies.

This amplification is the reason why our hearing is so sensitive. At the same time, the amplification makes the travelling wave so acute that it only touches a few steps on the staircase; in other words, it only "hits" a few pitches. If we lose the outer hair cells, we also lose the amplifier in our ear and need sound sources to be louder—but even then, we only hear a "mishmash" of sound because we cannot separate the pitches properly.

While the outer hair cells have an amplifying effect, the inner hair cells pass the sound information on to the auditory nerve cells, which register it in the brain. This makes them the "microphone" of our brain: roughly one microphone per stair step or pitch, totaling about 3000.

And how does the sound information get converted into a nerve signal?

That's a research topic that has kept our Göttingen team busy for 20 years!

Once again, the process begins with the hair bundle and pores: the inflow stimulates the hair cells and protein bodies are activated again. But in the inner hair cells, the pores are there to let the messenger chemical Ca^{2+} flow into the hair cells at the places where inner hair cells come into contact with auditory nerve cells.

Ca^{2+} is an important messenger chemical for the cells and brings other protein bodies in so that the hair cell releases the

neurotransmitter glutamate onto the nerve cell. Glutamate is the most important stimulating neurotransmitter in our nervous system, used by nerve cells on contact spots, or "synapses," to communicate with each other. Glutamate is available at the synapse in small containers – the membrane vesicles – which fuse with the membrane of the hair cell and release their contents into the synaptic gap between the two cells.

If you heard this text read aloud, that process would happen over 100 times per second in the synapses of your hair cells. But that mind-blowing level of activity is not the only thing that's really impressive. The precision timing of the coupling process for releasing the sound stimulus is so high that our brain stem can locate the source of the sound with the nerve impulses formed in both ears. We can detect differences of 10 billionths of a second in the timing of sound stimuli on both ears, a truly amazing feat of nature!

We have found that the glutamate content of a single vesicle is sufficient to trigger a nerve impulse in the auditory nerve cell: something that is unique in the entire nervous system! This high level of sensitivity is probably necessary for using the resources of the hair cells sparingly.

But how does this process work?

Glutamate binds to the synaptic membrane of the auditory nerve cell through protein bodies or so-called "glutamate receptors." These then open up as pores and allow electrically charged particles to flow into the cell. That provides electrical stimulation to the nerve cell until a nerve impulse forms. It sends the information to the brain, where the sound is perceived.

What are our current research questions?

We have learned some things about the synapse and the protein bodies that are active there. For example, about the Ca^{2+} channels and about otoferlin, which may be "broken" in hereditary hearing impairments so that the microphone no longer works. We found that, from a molecular perspective, synapses in the

hair cells diverge significantly from the blueprint of synapses in the brain, which use different proteins. This explains that genetic disorders of the hair cell synapses lead to hearing impairment without defects in the brain, because the proteins there are not affected. In Göttingen and elsewhere, we have now succeeded in alleviating this type of hearing impairment in mice by implanting the healthy gene into the defective hair cell using a viral gene shuttle.

Because the synapse is so sensitive to glutamate, sounds that are too loud cause glutamate overstimulation and, presumably, long-term damage to synapses. Because the first synapses affected are those we use to hear louder tones, whereas the auditory threshold, in other words our sensitivity to the softest tones, may remain normal, this type of hearing loss is called "hidden hearing loss." The impact of this acquired synapse-related hearing impairment, which is currently being researched worldwide — including in Göttingen — is still hard to assess, but has probably been underestimated.

This hearing impairment leads to particular difficulty understanding speech against background noise, e.g. when having a conversation in a crowd. The patients say, "I hear you, but I can't understand you!"

Beethoven described this exact distinction between hearing and understanding right around the time his ear problems began. In an often-quoted letter of June 29, 1801 (cf. chap. 2) to his friend Wegeler, he wrote: "[…] Sometimes I hardly hear someone who is speaking softly; I do hear the sounds, but not the words […]."

What to do?

Hearing aids, which you can learn about in Werner Köttgen's chapter, provide only limited help or none at all.

Cochlear implants that directly stimulate the auditory nerve, bypassing the body's "microphone," can help improve the un-

derstanding of language. You can learn more about that in Friedrich Bootz's chapter.

Because the electrical stimulation of each of the 12 to 24 electrode contacts in the cochlea is widely disseminated, cochlear-implant users — who currently number about half a million — have trouble differentiating pitches so they cannot hear music with the desired accuracy. In terms of our spiral staircase model, instead of individual steps, i.e. pitches, entire landings, i.e. octaves, are stimulated. Because of this, similar noises, such as a discussion partner's voice in a room where lots of other people are talking, are intrinsically difficult to distinguish. We even lose our ability to recognize the melodies in a piece of music.

In Göttingen, we are approaching this problem using light instead of electricity because light is easier to consolidate in space than electricity.

Hearing with light?

Optogenetics makes it possible. We use viral gene shuttles to build "light switches" in the cell membranes of auditory nerve cells to control the cells through light. Activating the cells with light causes a nerve impulse to form: the cells that usually react to the glutamate of the inner hair cells are now controlled by light, which should lead to perception of hearing.

We have already succeeded in doing this in the auditory nerves of rodents: the animals hear through light! Quite a bit of work needs to be done before this method can be used for people with hearing impairments. In cooperation with technologists in Freiburg and Chemnitz, we are developing optical cochlear implants based on light-emitting diodes or fiber optics. The development is taking place in animals with a view towards human use. If it leads to a medical product, the hearing impaired will probably be able to hear significantly better than they can with current cochlear implants. Above all, it would allow for better understanding of speech in loud environments

and improve their perception of music. We could think of it as the "music of the future": if Beethoven had had access to a device of this kind, it might have given him a chance to hear his own music.

Adnotations

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Chapter 7

Beethoven: Could we find out today why he went deaf? Diagnosis of deafness

Götz Schade

Status quo in Beethoven's time

In his letters and personal testimonials, Ludwig van Beethoven provided interesting diagnostic clues about his gradually worsening deafness. He complained that his ability to hear had declined substantially over the years, beginning with the loss of high pitches that made it hard for him to hear certain instruments and singing voices. His excruciating tinnitus, his deteriorating ability to understand spoken language, and symptoms such as hyperacusis and a low threshold of discomfort caused him such psychological distress that he even harbored thoughts of suicide (cf. chap. 4). Therapies used by Beethoven include almond oil eardrops, cotton wool with horseradish, specialty teas, and tepid baths in Danube water (cf. chap. 2). Today we understand the futility of these well-meaning but imprecise attempts at treatment by his doctors. Current practice could treat Beethoven's hearing impairment with much greater precision (cf. chap. 9).

Approaching Beethoven from an audiological perspective, it should be noted that the possibilities for testing hearing during his lifetime were very limited. This is partly because knowledge of the physiology of hearing was still rudimentary (cf. chap. 6). Although the phenomenon of bone conduction hearing had been described by Girolamo Cardano (1501–1576) as early as 1550,[1] and the works of Hieronymus Capavecci (died 1589) had created an awareness of the difference between bone and air conduction hearing that could inform medical practice,[2] these insights were not yet routinely used for diagnostic classification of hearing disorders. There were also no specially de-

signed instruments for carrying out standardized hearing tests. Even though the modern tuning fork had already been developed in 1711 by the trumpeter and lutenist John Shore (1662–1752), it was only after Beethoven's death that that tuning forks and other measuring devices became part of the clinical diagnostics of hearing over the course of the 19th century.[3]

A short history of audiological procedures

While acoustics, as a science of the teaching of sound, can be seen as one of the oldest experimental sciences,[4] audiology (from Latin *audire*, "to hear," and Greek *logos*, "teaching") is a newer, multidisciplinary field that focuses on aspects of sound perception.[5] In the early 19th century, the first methods used for hearing tests were speaking sentences or words out loud or placing sounds such as the ticking of a pocket watch near or far from the ear. In principle, the procedural approach was much the same as measurements of speaking distance used today. Only after Beethoven died did Ernst Heinrich Weber (1795–1878) and Heinrich Adolf Rinne (1819–1868) introduce the tuning fork tests that were named for them and are still in use today.[6] These tests make it possible to distinguish hearing loss caused by sound-conduction problems from that caused by sensory issues. Friedrich Bezold (1842–1908) made improvements to qualitative localization diagnostics by employing various tuning forks with well-defined pitches so that a quantitative hearing examination became possible with the aid of the "continuous scale."[7] With the increasing availability of electro-technical processes in the last third of the 19th century, tuning forks were replaced by devices that could produce pitches at defined frequencies and transmit them to small loudspeakers, also known as receivers. In the late 19th century, the term "audiometer" was also commonly used for these devices.[8] The procedures of tone and speech audiometry were refined over time in series of psycho-acoustic tests. In addition, speech audiometry was quantitatively bolstered by the fact that the test words

(polysyllabic numerals and one-syllable words) were no longer spoken live and in person, but rather were first recorded and then played back over loudspeakers to the test subjects with standardized sound pressure levels. After the Second World War, Karl-Heinz Hahlbrock (1917–2003) developed and evaluated a test that is still used today for examining social hearing: the "Freiburg Speech Test."[9] In addition to these hearing test procedures (the "subjective" procedures that depend on the active cooperation of the person being tested), methods of measurement were developed in the second half of the 20th century that can be used without active participation of the test subject ("objective" procedures). The most important innovation in objective testing was the introduction of the measurement of acoustically evoked brainstem potentials,[10] and otoacoustic emissions[11] which will be described in greater detail below.

The status of otological diagnostics today

All of Beethoven's hearing-related symptoms would be easily accessible to modern otological diagnostics. The basis of every modern hearing diagnosis by an ENT doctor is a binocular microscopic examination of the ear canal and eardrum. In audiological diagnostics, this involves both subjective and objective procedures, of which a basic explanation follows.

Subjective audiological procedures

Subjective procedures currently in use include pure tone audiometry based on behavioral observation, the free-field approach, and interaural attenuation. These tests identify the reaction or hearing threshold of the person being tested, depending on their age. The audiometric measurements take place in a soundproof environment in special audiometric testing rooms.

Subjective test procedures also include assessment of directional hearing in a *camera silenta*, which is a room with extreme

sound insulation where a number of speakers (preferably at least 12) hang in a circle around the test subject, who has to indicate the direction from which the sound, in the form of white noise, is coming.

Subjective hearing tests on adults

Tone audiometry is used for identifying the hearing threshold of adults. The test subjects are presented with sounds at different frequencies and volumes through both air and bone conduction. They have to indicate the sound pressure level at which they begin to perceive the sounds. The Freiburg Speech Test is used to evaluate social hearing. Monosyllables and polysyllabic words for numerals are presented with defined sound pressure levels—once again through both air and bone conduction. The test measures what percentage of the words are correctly repeated at each sound pressure level.

Subjective hearing tests for children (pedoaudiological procedures)

To examine small children, speakers are placed around the test subject in a half circle to evaluate their reaction to white noise or warble tones. Children are also conditioned by colorful pictures that light up as soon as they look at the speaker from which the test sound is coming. With babies, the examiner has to pay attention to reactions such as arm movements or eye opening that can be evaluated as reactions to the test sound. Starting around age 4, buzzers or pin boards can be used for a kind of playful hearing test that collects subjective information about the test sounds (play audiometry). Understanding of spoken language is evaluated through tests at various difficulty levels depending on the test subject's age group (Mainz test 1–3, Göttingen test 1–2; Freiburg Speech Test, Oldenburg Sentence Test or Oldenburg Rhyme Test), where the children being tested show pictures only when prompted (e.g. Göttingen 1) or young people and adults

must be able to repeat words or phrases (e.g. Freiburg Speech Test). These tests are performed either in a quiet environment or against background noise. A higher level of difficulty is represented by dichotic listening tests (as designed by Uttenweiler[12] or Feldmann[13]) where two different words are played to the right and left ears at the same time. By 70 dB of testing volume, subjects should be able to understand and repeat at least 90 % of the terms. Uttenweiler's dichotic test is used for children age five and up, while Feldmann's test is generally used for children nine and up and is most useful for evaluating auditory processing.

Objective audiological procedures

The objective procedures can be performed with both children and adults.[14]

The most important objective measurement procedures include the BERA (brainstem evoked response audiometry). Theoretically, this test can identify a person's hearing threshold from the day they are born. These procedures are primarily used in pedoaudiological diagnostics when the hearing threshold must be accurately determined in an infant so that a precise hearing aid can be provided early in life. The human auditory system is fully formed at birth and the inner ear is already completely mature several months before birth. However, the auditory system continues to mature over the first two to four years of life and requires acoustic input for effective maturation in the brain. Normal language acquisition only takes place in conjunction with normal hearing ability. Because of this, the consensus is that hearing-impaired children must be provided with hearing aids between the third and sixth month of life, at the latest. Cochlear implants are provided to children with residual hearing in both ears before their first birthday, in the best-case scenario.

The most commonly used BERA diagnostics are the (screening) AABR, the click BERA, the low-chirp BERA, and the notched-noise BERA. They are designed to identify the hearing threshold objectively without requiring active participation by

the patient. These examinations are ideally carried out during spontaneous sleep. Sedation is also an option. BERAs under anesthesia are also standard practice, especially for children who would normally struggle against the examination.

The AABR stands for "automatic auditory brain response" and is used all over the world as a standard procedure for screening hearing ability. The child is exposed to clicking sounds by a microphone in the ear canal or headphones. Using electrodes placed on the head, brain potentials are derived in response to the sound impulses supplied to the child. This can determine within a few minutes whether the child's hearing threshold is better or worse than 35 dB.

Clicks are also used for the click BERA, which is used to determine a threshold in the main speaking range of 1000 Hz – 4000 Hz. Once again, sound impulses are sent to the ear through headphones and brain potentials are derived through electrodes. Using the so-called Wave V in the Jewett system (J I-V) (named after Donald Jewett,[15] who first described it), the potential threshold can be determined. That is the point in time at which a "J V" wave can be measured as the sound pressure levels decrease. The hearing threshold is 0–10 dB lower than the potential threshold. With decreasing sound pressure levels, the amplitude of the potential waves decreases and their latency increases during a BERA test.

Low-chirp BERA has a similar procedure to click BERA. However, in this case the stimulus sounds like birdsong but at a lower frequency ("low-chirp"), between about 150 Hz und 850 Hz.

Notched-noise BERA is another similar procedure where short tone bursts and a selective masking technique allow for a frequency-specific examination at 500 Hz, 1000 Hz, 2000 Hz and 4000 Hz.

Otoacoustic emissions (OAE) were made usable for audiological diagnostics by the English researcher David Kemp in 1978.[16] A distinction is made between TEOAEs (= transient evoked otoacoustic emissions) and DPOAEs (= distortion product otoacoustic emissions). With TEOAEs, clicks are sent towards the eardrum on the way to the inner ear through an am-

plifier positioned in the ear canal. The outer hair cells help to amplify this sound in the inner ear (cf. chap. 6). Contraction of the outer hair cells creates acoustic signals in the inner ear that can be measured with very sensitive microphones in the outer ear canal. Because the clicks only exhibit frequency components between 1000 Hz – 4000 Hz (the usual range of speech), this range, which is important for understanding language, is the only one tested. In contrast, DPOAEs use two long tones with different frequencies. When employed simultaneously, they cause a third tone—the distortion product—to be generated in the inner ear, which can then be used to test the outer hair cells at specific frequencies. The standard frequency range tested is 2000 Hz – 6000 Hz. However, high-frequency examinations can also be done up to about 10,000 Hz. These procedures are used for early diagnosis of damage due to chemotherapy in children with cancer, for example.

Objective audiological testing procedures also include tympanometry, which determines the pressure status of the middle ear and shows whether there is low pressure, fluid in the middle ear, or normal pressure conditions, which are necessary for proper functioning of the eardrum and auditory ossicles. Depending on the age of the test subject, different test frequencies may be used. For babies, it tends to be a 1000 Hz probe tone, while for older children and adults a 226 Hz probe tone is generally used. Measuring the stapedius reflex is another objective way to carry out standard measurements of ear function. Test tones above the threshold can be used to determine whether contraction of the stapedius muscle as a result of a loud tone above the threshold can bring about stiffness of the auditory ossicles in order to protect the potentially vulnerable inner ear. Assessment of how easy it is to set off the stapedius reflex is of decisive importance in the diagnosis of otosclerosis (cf. chap. 9).

Radiological procedures

Very soon after Wilhelm Conrad Röntgen (1845–1923) discovered X-rays in 1895, Arthur Schüller (1874–1957) introduced

imaging for assessing the petrous part of the temporal bone in 1905, which remained a core component of clinical otological diagnosis for some time.[17] However, it was only the development of sectional imaging in the form of computer tomography (CT) and magnetic resonance imaging (MRI) in the last third of the 20th century that enabled differentiated assessment of disorders such as malformation or postinfectious ossification of the cochlea, or tumors in the area around the auditory nerve.[18]

Conclusion

The differential diagnoses discussed in connection with Beethoven's deafness (cf. chap. 9) could be clarified with the procedures available today, both audiologically and radiologically, or if necessary, serologically as well.

Today a clear differentiation could be made between sensorineural hearing loss and sound conduction hearing loss. Using audiological and radiological diagnostics, it would also very likely be possible to identify which disorder was responsible for Beethoven's symptoms as described at the beginning of this essay.

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Chapter 8

History of hearing aids: From the ear trumpet to digital multi-channel technology

Werner Köttgen

Sound, hearing, feeling

That *sound* is an acoustic phenomenon that can have a great effect by its amplification and transmission is something known to us already from the bible. In the Old Testament it is reported in the Book of Joshua that the sound of seven trumpets made the city walls of Jericho collapse.[1] The conveying of sound through animal horns or pipe systems has also long been described. A sculptural example can be found on the northern portal of the Marienkapelle in Würzburg in a relief from the 15th century. God the Father speaks to Mother Mary and his words are passed on from his mouth into her ear via a tube. The meaning of this image has occupied the devout since its creation. God the Father seems to use the pipe connection as a direct route for his message to Mary, while Mary for her part "receives" the proclamation from the Lord via the pipe. Beside Mary's ear, a dove comes out of the pipe as a symbol of the Holy Spirit. On the pipe, a smiling infant Jesus glides head first down to Mary: the proclamation cannot be depicted more vividly.

Likewise in the bible, hearing is assigned a very special role. The quote "If anyone has ears to hear, let him hear" comes up in several passages of the New Testament.[2] In this way, the importance of the oral tradition from mouth to ear is emphasized.

Socially, a restriction on one's hearing capacity leads to several unpleasant phenomena. On the one hand, one can take part in interpersonal communication, especially in groups, only to a limited extent; on the other hand, those hard of hearing are afraid of not being taken seriously by their fellow beings and so frequently make great efforts to not let others notice their

deafness, as Beethoven had already described in his Heiligenstadt Testament of 1802 (cf. chap. 4).

Deafness as a widespread disease

Beethoven is by no means a one-off case with his deafness. There are no exact data on how many people have impaired hearing in Germany in the 21st century. The actual figures lie somewhere between 5.4 and 11.11 million persons affected.[3] Even without having the exact figures, impaired hearing can thus definitely be described as a widespread disease.

Remedies for impaired hearing

The probably first and most simple means of assisting improved hearing is to place the hand behind one's ear.

However, over and above this, efforts have long been made to achieve an amplification of the sound by means of technical aids.

Taking the historical overview, these can be allocated to three broad categories:

1. Hearing aids that pick up sound and amplify it acoustically,
2. Hearing aids that pick up sound, electronically amplify it, process it in analog or digital form, and acoustically emit it,
3. Hearing aids that are implanted and for which the signal is digitally processed. The transmission of the signal occurs either mechanically as with bone conduction systems or by implantable hearing systems, or as electrical impulses directly on the auditory nerve fibres, such as cochlea implants.

In the following a selection of these technical devices is described. They are illustrated using depictions of hearing aids,

most of which can be found in the Köttgen Collection in Cologne.

1. Hearing aids that pick up sound and amplify it acoustically

Besides enlargening the surface of the auricle using the hollow hand, animal horns were initially used that were held to the ear in order to amplify sound for the hard of hearing (see Ill. 1). Early reports on the use of animal horns for this purpose can already be found in the ancient world.[4]

Frederick C. Rein was the first commercial maker of ear trumpets. He began his business in London in 1800. The company existed as F. C. Rein & Son of London until 1963.

Different materials were used for the ear trumpets such as horn, ivory, tortoise shell (the carapace of tortoises) etc., but also cellulose or hard rubber, and various metals (from sheet iron to gold), which were in part richly decorated (cf. Ill. 2).

Resonance phenomena are employed for amplification due to the ear trumpet's conical design. Amplifications up to 20 dB between 2000 and 2500 Hz are achieved. By conveying the sound directly into the ear, language is made louder and more comprehensible. The spherical spread of the sound—and thus its attenuation—becomes smaller.

From 1812 to 1814 a mechanic from Regensburg, Johann Nepomuk Mälzel (1772–1838) made ear trumpets for Ludwig van Beethoven. Four of these hearing aids have been preserved in the Beethoven House in Bonn (cf. Ill. 3). Beethoven probably used binaural funnel ear trumpets at times and kept his hands free for playing the piano.

In order to reduce as much as possible the above-described social "stigmatization" caused by hearing impairment through the use of a hearing aid, the attempt was made early on to construct hearing aids that were less visible or that could be skilfully concealed.

Examples of this include the hearing tube, which could be worn unobtrusively as a whispering or conversation tube in the

sleeve of a jacket. It amplifies between 250 and 1000 Hz by ca. 6 dB (cf. Ill. 4). The saxophone or pocket earpiece could be hidden in the chest pocket, too. The length of the device is shortened by folding the tube into itself. This telescopic function is intended to make the hearing aid less noticeable and handier (cf. Ill. 5).

In the endeavor to build the most discreet hearing aids possible, the idea arose of integrating hearing trumpets into walking sticks. At this time walking sticks frequently had other hidden functions, such as containers for drink or as a scabbard for sabres, and similar uses. The hearing stick was a combination of walking stick and hearing aid that the gentleman could casually place over the shoulder (cf. Ill. 6).

In the mid-19th century efforts were made to design hearing aids to be ever smaller and thus less conspicuous. The effectiveness of the device was thereby reduced, however.

As the phenomeonon of bone conduction hearing had been known since the Renaissance (cf. chap. 7), hearing aids were also developed that used this acoustic access to the inner ear and could be subtly hidden in a lady's fan: a foldable, stretched-out hearing fan was pressed against the teeth, enabling the transmission of sound onto the cranial bones (cf. Ill. 7). The principle of bone conduction is also applied even today in the 21st century using the most up-to-date hearing devices, so-called bone-anchored hearing aids (BAHA)[5], which now are employed when the patient's sound conduction is blocked and cannot be operatively restored. In addition, these devices use the digital technology described in point 2.

2. Hearing aids that pick up sound, electronically amplify it, process it in analog or digital form, and acoustically emit it

The first quantum leap in the development toward modern hearing aids was the possibility of picking up the sound electronically and amplifying it. This became possible as from the middle to end of the 19th century a rapid development took place in processes that can be summed up by the term electrical engineer-

ing, after the laws of electricity had previously been recognized in many small single steps.[6] The first electrical hearing aids were developed at the end of the 19th century. The basis for developing these devices was the "carbon-granule microphone" which was invented almost simultaneously in 1860 by Alexander Graham Bell (1847–1922) and Johann Philipp Reis (1834–1874): A membrane is pressed differently by the sound pressure onto the carbon granules, which carry live current. This changes the current flow in the rhythm of the sound. Thomas A. Edison (1847–1931)—himself hard of hearing—developed an amplifier for the telephone handset in 1870, as did Werner von Siemens (1816–1892) in 1878, which in each case was intended to make telephoning easier for those hard of hearing. At that point in time, this represented a very new form of technology, which had been significantly further developed by Bell and Edison in the last third of the 19th century.

The first person to use the carbon microphone technology to develop a hearing aid was Miller Reese Hutchinson (1876–1944) around 1895. He called it an "Akouphone." From 1902, he developed portable devices and called them "Acousticon" (cf. Ill. 8). These initial devices had the drawback still of being rather costly, so that only a few patients, such as the English Queen Alexandra (1844–1925), for example, could afford this innovation. Shortly afterwards, the beginnings of the "tube technique" emerge: the first tube amplifier was presented in 1912 by Lee der Forest (1873–1963). The devices required a power connection and were relatively cumbersome and heavy. The tubes had the drawback, moreover, that they became very warm during operation.

From 1910 Fa. Siemens developed the Phonophor (cf. Ill. 9) as a device which, equipped with additional insertable receivers, so-called "ear-speakers," could make the amplification of sound more effective at the ear (cf. Ill. 10)

From 1920 onwards, it became possible through increasing miniaturization of the vacuum tubes to produce hearing systems with differing amplifications in the low and high frequencies (tone control). In this way, not only was a quantative amplifica-

tion possible for the first time, but the sound could be amplified in different frequencies, i. e. qualitative, too.

From around 1950 onwards, subminiature tubes enabled smaller designs for hearing aids that are equivalent in size to a cigarette box (cf. Ill. 11).

The next quantum leap in technology, however, was the introduction of transistors, for the invention of which the researchers William Shockley, John Bardeen and Walter Brattain received the Nobel Prize for Physics in 1956. With the help of these components, hearing aids became significantly smaller, used distinctly less electricity and showed better frequency selectivity. In this way they could be built so small that all the electronics required, the microphone and loudspeaker (so-called sound converter or receiver) plus power supply could be placed directly next to the ear from the 1960s onwards: the so-called BTE devices (behind-the-ear devices) were developed (cf. Ill. 12). This, too, can be seen as a quantum leap forward in the history of hearing aids. The devices were initially analog hearing aids, i. e. the amplification characteristic followed the input signal in a continuously "analog" way. In the further rapid development of technology, transistors were then incorporated into integrated circuits on microchips. From the end of the 1980s, "analog hearing aids" were added to and increasingly replaced by "digital hearing aids." A further milestone was reached.

Today 20 million—or even more—transistors are contained in fully digital hearing aids. Digital hearing aids use an "intelligent" technology, i. e. the incoming signal is amplified in "discrete steps" depending on the program and requirement concerned. Separated filters, so-called channels, are used for different frequency ranges. Through this, the device can be fitted with increasing accuracy in line with the individual hearing loss curve. In addition, pre-processing of the input signals is possible, which both facilitates speech recognition and is able to suppress ambient noise. In the currently available digital hearing aids, adaptive microphones align themselves according to the signals, the signals are "evaluated" as a situation and the available programs (for example, music or speech) are automa-

tically changed, speech is recognized in real time and highlighted. Besides, with a binaural fitting, the hearing aids can communicate and adjust to one another wirelessly via Bluetooth. The devices have remote controls, which meantime can be controlled via smartphone apps, too. Fine adjustments online by the hearing aid acoustician are also possible.

The wish already described above of some patients in the 19th century to deal with their hearing impairment in company as discreetly as possible—this was also Beethoven's wish (cf. chap. 4) explicitly expressed in the Heiligenstadt Testament—was met by manufacturers developing hearing aids that are as invisible as can be. For this purpose, so-called ITE devices (in-the-ear devices) were developed (cf. Ill. 13). As early as 1983, Ronald Reagan triggered an in-the-ear boom because, as President of the USA, he admitted to his in-the-ear aids. Today, however, about 90 % of hearing aid wearers are still fitted with BTE devices. The acceptance of technical devices that are visible close to the ear is also helped by the numerous "gadgets" and lifestyle products in which, for example, Bluetooth in-ear headphones are also used by people who are not hard of hearing.

3. Implantable hearing aids

Despite the rapid technological development of hearing aids described above, there are hearing impairments where conventional hearing aids are stretched to the limits of their performance. This is the case both with special forms of conductive hearing loss and with drastic hearing loss bordering on deafness. Implantable hearing aids can help here, usually surgically inserted by highly specialised ear, nose and throat specialists in special hearing centers.[7] In this case, the signal is transmitted either mechanically, like in bone conduction systems or implantable hearing aids, or as electrical impulses directly to the auditory nerve fibers, as in cochlear implants (cf. chap. 9).[8]

The cochlear implant (CI, inner ear prosthesis) enables auditory perception, i. e. auditory sensations and speech comprehension, with the aid of electrical stimulation of the still functioning

auditory nerve (cf. chap. 6, chap. 9, cf. Ill. 14). The earliest attempts at electrical stimulation of the ear were already undertaken by Volta during Beethoven's lifetime.[9] Beethoven himself was open toward these experiments and presumably even participated as a test person in galvanic experiments of his physician Prof. Schmidt (cf. chap. 2).

In the currently valid guidelines for CI provision, the inclusion of hearing aid acousticians in the technical service provided on-site is described as possible, provided this person possesses a special qualification.[10]

Auditory acoustics today[11]

Alongside the rapid technological development of hearing aids, the trade of the hearing aid acoustician has also evolved into an occupation in its own right requiring training. Recognition as a health trade was granted in June 1965. The Federal Guild of Hearing Aid Acousticians (biha) was founded in 1966 to promote the interests of its members.[12] Since 2016, the professional title has been changed to hearing acoustician (Hörakustiker). The central training institution for German hearing acousticians is the Academy of Hearing Acoustics in Lübeck, where attendees are trained to become assistant hearing acousticians. After a period of work experience, trainees can take the examination to become a master. Leading on from this, it is possible to study for a Bachelor's degree, or even a Master's. According to data from biha, the occupation of hearing acoustician in Germany, which consists of more than 6,700 hearing acoustic businesses and around 15,000 hearing acousticians working in the field, provided some 3.7 million people with hearing systems.[13]

Summary

Since Beethoven's day, several quantum leaps have been recorded in our understanding of physiology (cf. chap. 6), in diagnostics (cf. chap. 7) and in therapeutic options for deafness in medicine (cf. chap. 9), as well as in the provision of hearing aids. With the current possibilities for provision of hearing aids, Beethoven could be equipped most likely at the outset of his hearing impairment with hearing aids, and following the onset of deafness with a CI. With these hearing devices it would have been possible for him to participate in everyday communication and he would no longer have been socially excluded. He would not have been able satisfactorily to hear his music, however—not even with the most modern technology available today.

Adnotations

[1] Joshua 6.4–20.
[2] Mark 4.23; Matthew 11.15, 13.9, 13.43; Luke 8.8, 14.35.
[3] Bundesinnung der Hörakustiker KdöR. Wörterbuch der Hörakustik. www.biha.de – Hörakustiker geben Einblick in ihre Welt. 2018 https://www.presseportal.de/pm/70547/3913310 (accessed on 14.03.2020); by Gablenz, P., Hoffmann, E., Holube, I. Prävalenz von Schwerhörigkeit in Nord- und Süddeutschland. HNO. 2017; 65(8):663–670.
[4] The Roman doctor Archigenes (2nd century after Christ) mentioned the ear trumpet as a method against deafness, as did the Greek doctor Alexander of Tralles (5th century after Christ); quoted from H. Kugener, https://www.kugener.com/de/humanmedizin/hno/54-artikel/3315-hoerrohr.html, last accessed on 19.02.2020.
[5] Federspil, P. A. (2009) Knochenverankerte Hörgeräte (BAHA). HNO 57, 216–222.
[6] Sjobbema, D. J. W. (1999). Die Geschichte der Elektronik. Vom Volta-Element zum digitalen Fernsehen. Elektor-Verlag, Aachen.
[7] AWMF-Register-Nr.: 017–071 Klassifikation: S2k Leitlinie "Cochlea-Implantat Versorgung und zentral-auditorische Implantate" der Deutschen Gesellschaft für Hals-Nasen-Ohren-Heilkunde, Kopf- und Hals-Chirurgie e. V., Bonn.
[8] Lenhardt, E. (1993) Intracochleäre Platzierung der Cochlear Implant Elektroden in soft surgery technique. HNO 41(7):356–9.

[9] Jaekel, K., Richter, B., & Laszig, R. (2002). Die historische Entwicklung der Cochlea-Implantate – Von Volta bis zur mehrkanaligen intracochleären Stimulation. *Laryngo-Rhino-Otologie, 81*(9), 649–658.
[10] AWMF-Register-Nr.: 017–071 Klassifikation: S2k Leitlinie "Cochlea-Implantat Versorgung und zentral-auditorische Implantate" der Deutschen Gesellschaft für Hals-Nasen-Ohren-Heilkunde, Kopf- und Hals-Chirurgie e. V., Bonn.
[11] See Hüls, Rainer (1999). Die Geschichte der Hörakustik: 2000 Jahre Hören und Hörhilfen. Median, Heidelberg.
[12] Hüls, R., Schwoch, J. (2016). 50 Jahre Bundesinnung der Hörgeräteakustiker: Gesundheitshandwerk Hörakustik. Innocentia Verlag, Hamburg.
[13] https://www.biha.de/media/Presse-Infos/200128_PM_Bundespressekonferenz_biha.pdf.

Ill. 1: Animal horn for amplification of sound

Ill. 2: Ear trumpet (metal richly decorated)

Ill. 3: Beethoven's ear trumpets by Johann Mälzel

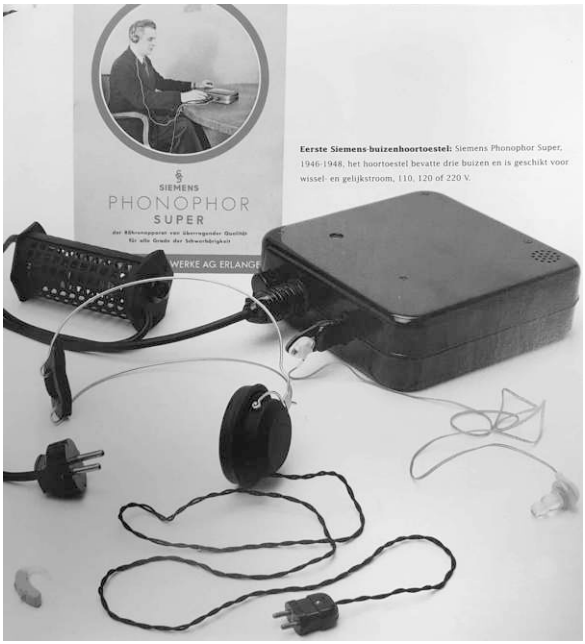
Ill. 4: Hearing tube

Ill. 5: Saxophone with telescopic function

Ill. 6: Hearing stick

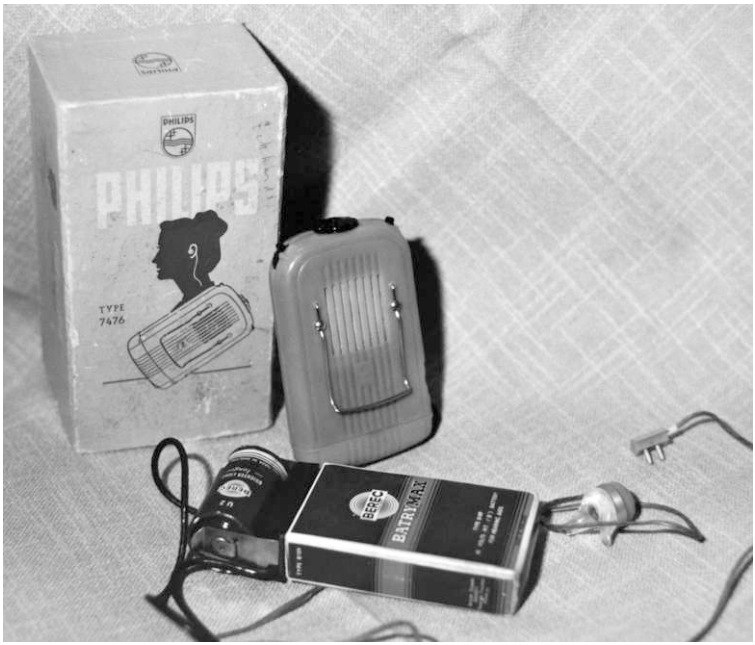
Ill. 7: Bone conducting lady's fan

Ill. 8: Acousticon (Miller Rees Hutchinson)

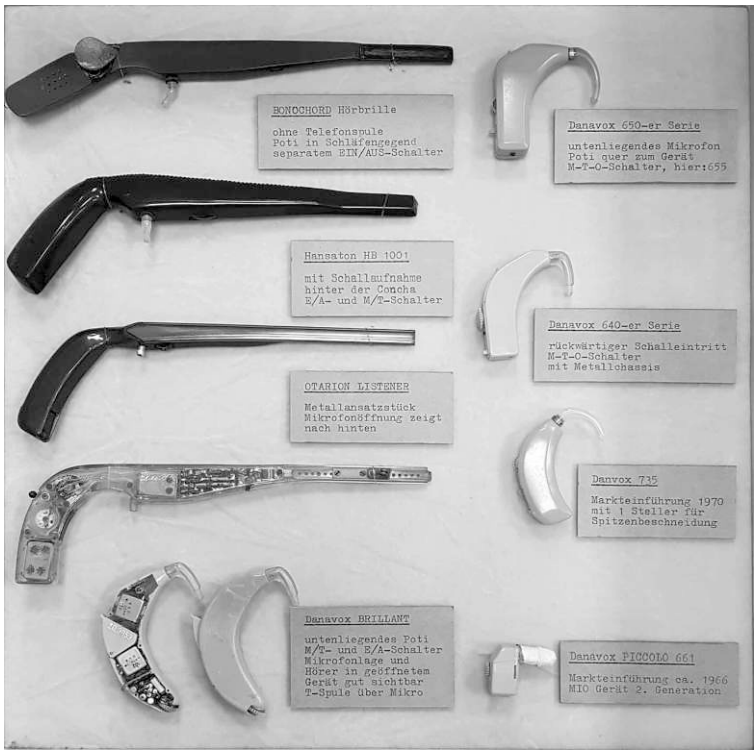


Ill. 9: Phonophor (Siemens)

Ill. 10: Ear-speakers for Phonophor



Ill. 11: Small design with subminiature tubes



Ill. 12: Behind-the-ears (BTE) devices

Ill. 13: In-the-ear (ITE) devices

Ill. 14: Cochlear Implant (CI)

Chapter 9

Beethoven's Deafness: Could he be treated today? Therapeutic options for his hearing impairment

Friedrich Bootz

The cause of Beethoven's hearing loss, which began when he was comparatively young and progressed over time to total deafness in both ears, remains a matter of speculation. Because there were no diagnostic methods for examining the anatomy/physiology or function of the ear at that time, the cause of his hearing impairment remained largely obscure (cf. chap. 6, chap. 7).

The evidence is therefore limited to diagnostic information provided by Beethoven and by the accounts of his doctors, which discussed not only his hearing impairment, but also a number of other illnesses (cf. chap. 2; chap. 4; chap. 5). These sources are vague by modern standards and, in some respects, contradictory. The results of his autopsy offer some clues (cf. chap. 3, chap. 5); however, the petrous part of the temporal bone (the seat of the organs of hearing) is unfortunately not described in detail in the report. It was removed from the skull and went missing long ago. Even the two exhumations in 1863 and 1888 yielded no substantial information.

In the past, a wide variety of differential diagnoses have been discussed as causes for Beethoven's hearing impairment. A detailed overview can be found in Jesserer and Bankl.[1] Speculations range from inflammatory diseases caused by infectious agents that we are familiar with today, such as typhoid fever (Salmonella typhi), murine typhus (Rickettsia mooseri) or syphilis (Treponema pallidum), to those for which no specific pathogen has yet been identified, such as inflammation of the auditory nerves (Neuronitis nervi acustici). Further differential

diagnoses include chronic lead poisoning and illnesses for which the causal mechanisms are still uncertain and which mainly lead to osseous or ossifying changes such as Paget's disease or otosclerosis, or those where the inner ear is also directly affected.

If we follow the reconstruction of diagnostic information in Jesserer and Bankl, the first few symptoms of Beethoven's loss of hearing and tinnitus seem to have begun gradually in 1796, but he never complained of vertigo. By 1802, his complaints were so severe that they brought Beethoven "close to despair," as he put it in the Heiligenstadt Testament (cf. chap. 4). For years, until about 1812, his condition seems to have been stable; starting in 1813 the records speak of a gradual worsening of his ability to hear; by 1818 he must have lost the ability to understand spoken language, since that was the first year he made use of conversation notebooks; by 1824, Beethoven was practically deaf.

Beethoven himself first gave a clear account of his declining ability to hear in letters to two of his closest friends when he was 30. On June 1, 1801, he wrote to Karl Amenda and on June 29, 1801 to Franz Gerhard Wegeler.[2] With regard to the possible cause of his hearing loss, he told Amenda: "[…] it probably arises from the condition of my lower abdomen […]" and Wegeler: "[…] But the envious demon, my poor health, has thrown a wrench into the works, to be precise: for the past three years, my hearing has become worse and worse and this affliction was apparently first set off by my lower abdomen, which, as you know, was already miserable back then but has deteriorated here, afflicting me with constant diarrhea, and with extraordinary weakness […]."

Thayer,[3] an important biographer of Beethoven in the 19th century (cf. chap. 2), also reported that in 1815, Beethoven had told the English pianist Charles Neate that his deafness came about when he expressed his anger at an impertinent tenor by throwing himself dramatically on the floor in front of him. Thayer quoted Beethoven's statement—as reported to him by Neate—word for word: "I leapt up from the table with such agitation and fury that as the man was entering the room, I threw myself on the floor as they do on stage (here Beethoven

spread his arms out and made an explanatory gesture) and fell on my hands. When I stood up again, I found I was deaf, and have been so ever since. The doctors say the nerve is injured." Whether the story really happened in this way and whether Beethoven really made this statement to Neate is unclear, because it is the only account that identifies this trauma as the cause of Beethoven's hearing impairment and it does not come from Beethoven directly, but was first reported long after Beethoven's death. From today's perspective, a traumatic origin of this kind without a specific head injury seems highly unlikely to cause deafness. Deafness following head trauma would have to involve a fracture of the petrous bone, which would have led to sudden rather than gradual hearing loss. The infectious diseases in question, typhus or typhoid fever, would also have led to sudden deafness rather than a progressive illness that developed over many years. The autopsy showed no typical signs of syphilis, which were surely well known to doctors at the time of Beethoven's death, as it was a very common infection at the time.

The following essay will examine the therapeutic options available today for the most frequently discussed differential diagnoses.

Based on the increased ossification of the skull found at the autopsy, several authors have presumed in retrospect that Paget's disease could have been present.[4, 5, 6] According to a translation of the autopsy report, which was originally written in Latin: "[…] The cranial vault shows great density throughout and thickness amounting to about half an inch. […]" According to the American pathologist Oiseth, who also postulates Paget's disease, the calvaria was twice as thick as normal at 13 mm (converted measurement).[7] The disease is named after James Paget (1814–1899), who first described it in the second half of the 19th century,[8] so it was not yet known during Beethoven's time. It usually results in dysregulated bone remodeling and can affect the bones of the skull. It seems improbable today that it would cause hearing loss. There are only a few individual case histories that connect hearing impairment to Paget's disease. A connection between Paget's disease and otosclerosis has also

been discussed; however, as a rule the latter occurs on its own as an isolated disease. In 1986, an opportunity arose to examine bone fragments from the back of Beethoven's head, which had been missing for a long time following the exhumation, and this more recent research found no indications of Paget's disease.[9]

Even long after his death, many scholars studied Beethoven's hearing impairment. Ultimately, rather than providing additional clarity, this research led to assumptions about very different and contradictory causes. He probably also suffered from middle ear infections, which can lead to hearing impairment, but not to deafness in both ears. Careful diagnosis, which today can discover the location and type of disease, is of decisive importance for targeted therapy (cf. chap. 7). Based on the progression of the hearing impairment summarized above and the symptoms reported by Beethoven, two diagnoses are favored today: otosclerosis and progressive inner-ear hearing loss.

Otosclerosis was not yet recognized as a discrete illness during Beethoven's lifetime. Beginning in 1863, it was described in several consecutive publications with increasing differentiation by Adam Politzer (1835–1920).[10] Although otosclerosis causes a disorder of sound transmission, it can also lead to functional disorders of the inner ear. In contrast to Beethoven's time, we now have therapeutic treatments for both otosclerosis and inner-ear hearing loss.

Otosclerosis: this disease results in increasing loss of hearing, which mainly affects the middle ear but can also result in damage to the cochlea. Otosclerosis is often localized on one side; bilateral disease states are less common. Otosclerosis occurs more frequently in women than men; hormonal changes are assumed to be a cause. Otosclerosis involves new bone formation at the oval window, the place that marks the transition from the middle to the inner ear (cf. chap. 6). The stapes with its footplate is located in the oval window. When sound reaches the eardrum, it is transmitted through the series of auditory ossicles, including the stapes in final position, to the fluid-filled inner ear. If the stapes becomes fixed, the sound can no longer be transmitted without interference, leading to what is known as conductive hearing loss. Otosclerosis in the oval window niche

can also spread towards the inner ear and cause a functional disorder of the cochlea. The so-called Carhart's notch, which appears at 2000 Hz, is a typical feature. In the vast majority of cases, a clear diagnosis of otosclerosis can be made through a specialized hearing test. One clear indicator is a lack of stapedius reflex. The goal of otosclerosis therapy is to restore the sound conduction system to the oval window with unobstructed transmission of sound vibrations to the inner ear. This requires microsurgery on the middle ear, performed with the aid of an operating microscope. The operating technique for this intervention, also known as stapedotomy, was mainly developed in the second half of the 20th century.[11] It can be carried out with either a local or a general anesthetic. The advantage of a local anesthetic is that, in addition to putting less stress on the body, it allows the patient to perceive the improvement in hearing as the operation is coming to an end. This intervention involves a small incision in front of the ear into the ear canal, which is expanded to gain a better overview of the entire operating area. The skin of the ear canal is then incised in two places in the area of the rear wall in the direction of the eardrum and the skin is lifted from the osseous ear canal to the eardrum. The eardrum, which remains in contact with the skin of the ear canal, is then lifted out of its osseous housing under the cartilaginous ring (Anulus tympanicus) that stretches out the eardrum. This gives the surgeon access to the middle ear. A small nerve (the Chorda tympani), which plays a role in tasting, needs to be relocated slightly. The bone at the entrance to the middle ear is moved so the surgeon can see the entire stapes. Now there is a chance to test again whether the stapes is definitely fixed by trying to move it with an instrument. The mobility of the other auditory ossicles is also tested by moving the handle of the malleus with an instrument, which should also cause the long process of the incus to move. This method can definitively confirm the diagnosis of otosclerosis, i.e. fixation of the stapes. Afterwards, the joint between the incus and stapes is opened. The stapes tendon is severed and the two limbs are separated from the footplate (Ill. 1). The suprastructure of the stapes is removed. A perforation is then made in the footplate of the stapes

and a prosthesis consisting of a Teflon shaft and a platinum ribbon is inserted (Ill. 2). The Teflon shaft is inserted into the perforation and the platinum ribbon is wrapped around the long process of the incus and tightened with a special instrument (Ill. 3). The perforation is also sealed to the Teflon shaft with connective tissue. In addition to the aforementioned prosthesis, there are middle-ear prostheses made of titanium, r ceramic or other materials that can also be used for this procedure. Afterwards, the eardrum can be returned to its original position along with the skin of the ear canal, after which patients under local anesthetic will already be able to perceive an improvement in their hearing. It has been shown that early surgical therapy can prevent or at least slow the spread of otosclerosis towards the cochlea. In cases of bilateral otosclerosis, the operation is performed first on the ear with worse hearing, and then on the other ear after a minimum waiting period of six months.

Whether Beethoven really suffered from otosclerosis and whether he went deaf from an "otosclerosis of the inner ear type" is a much-discussed controversy in the specialist literature. Convinced proponents, such as Jesserer und Bankl, are countered by equally convinced opponents of the thesis, such as Zenner.[12]

Today, the most probable cause for Beethoven's deafness is considered to be progressive inner-ear hearing loss. Despite modern diagnostics, the cause of inner-ear deafness remains mostly unknown. Due to continual loss of sensory cells in the cochlea, the initial phase involves high-frequency hearing loss. Beethoven described this symptom himself in the letter of June 29, 1801 to Wegeler quoted above: "[…] I do not hear the high notes of instruments or singing voices […]." The disorder can gradually spread to all frequencies and can eventually lead to deafness in both ears. It is not known what causes this degeneration of sensory cells, and so even today there is no etiological therapy. In many cases, cortisone therapy is carried out, although cortisone has not been shown to be effective on the sensory cells of the cochlea. However, in addition to medicinal treatments, there are various possibilities for rehabilitating the sense of hearing. If some hearing ability remains, hearing aids

can be used to improve it; these are usually placed in the outer ear canal (cf. chap. 8). It is also possible to implant hearing aids under the skin over the skull bones. Hearing aids should only be implanted if the affected person does not benefit from conventional hearing aids. Hearing-aid implants work by directly setting the stapes in motion through a small vibrating mass.

If hearing is completely lost in both ears, hearing aids are no longer a suitable treatment. However, there are other options for the rehabilitation of hearing. These consist of cochlear implantation (CI), in which a multichannel electrode array is implanted directly into the cochlea to stimulate the auditory nerve. Electric stimulation of the ears was first considered by Volta back in Beethoven's lifetime (cf. chap. 2). But before these ideas could be realized in practice, about 180 years passed—it was only in the mid-1980s that the first functional implants began to be widely used in human patients.[13] The prerequisite for successful CI treatment is a functioning auditory nerve, which is tested using special tests before implantation. A disorder of the auditory nerve leading to hearing impairment or deafness in both ears is very unlikely and usually due to tumors (e.g. neurofibromatosis II). An MRI is used to decide whether the cochlea is suited to the introduction of this type of implant.[14] The implant is placed in an indented area of the petrous bone under the skin behind and above the outer ear. From there, the middle ear is also opened to allow access to the cochlea. The basal coil of the cochlea is easy to access in the middle ear. It contains the co-called round window, the entrance to the cochlea. After opening the membrane of the round window, the electrode can be introduced into the cochlea, near the auditory nerve.

A sound processor carried behind the ear or on the body captures audio signals and converts them into a digital code. A battery module provides the whole system with electricity. The sound processor transmits the digitally coded signal through the transmitter coil located on the side of the head to the implant under the skin. The implant transforms the digitally coded audio signal into electric impulses and sends them to the electrode array in the cochlea (Ill. 4). The implant electrodes stimu-

late the auditory nerve in the cochlea, which then sends the signal impulses to the brain, where hearing is perceived.

Different regions of the auditory nerve are stimulated by specific frequencies and the corresponding potentials are sent to the brain's auditory cortex. This causes a hearing impression. Appropriate hearing training is necessary after this intervention to develop good understanding. Today, it is standard practice to place implants in both ears.

For the very rare cases in which the auditory nerve is no longer functioning (see above), there is the option of placing a stimulator electrode in the region of the brain stem to stimulate the subordinate structures of the auditory nerve and/or the auditory system.[15] However, this is a very complex procedure that is usually done by an ENT specialist in cooperation with neurosurgeons.

Regeneration of sensory cells in the cochlea by stem cells should be mentioned as a possible future treatment for Beethoven's inner ear hearing loss. Several attempts to achieve this have already been made by scientific research groups; however, so far they have only taken place in animal experiments.[16] Two approaches are being taken: endogenous (localized in the cochlea) stem cell activation and exogenous (introduced to the cochlea from outside) stem cell transplantation.[17]

It is likely that today's surgical and non-surgical measures could have helped Beethoven, whether he suffered from otosclerosis or from progressive degeneration of the sensory cells in the inner ear.

This means that today, the wish Beethoven expressed in his Heiligenstadt testament could come true: he would no longer have to withdraw from society and would once again be able to interact normally with people.

Adnotations

[1] Jesserer, H., Bankl, H. (1987) Die Krankheiten Ludwig van Beethovens. Pathographie seines Lebens und Pathologie seiner Leiden. Wilhelm Maudrich, Vienna.

[2] Beethovens sämtliche Briefe (1906), ed. A. C. Kalischer. Schuster & Loeffler, Berlin.
[3] Alexander Wheelock Thayer (1866) Ludwig van Beethovens Leben (translated by Hermann Deiters), volume 2, chapter 4, p. 167.
[4] *Neumann, H. (1927) Beethovens Gehörleiden. Vienna. Med. Wschr. 77:1015–1019.*.
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[6] Meißner, T. (2018) Ludwig van Beethoven: Sein Schädel ließ Ebenmaß vermissen. In: Der prominente Patient: Krankheiten berühmter Persönlichkeiten. Springer, Heidelberg.
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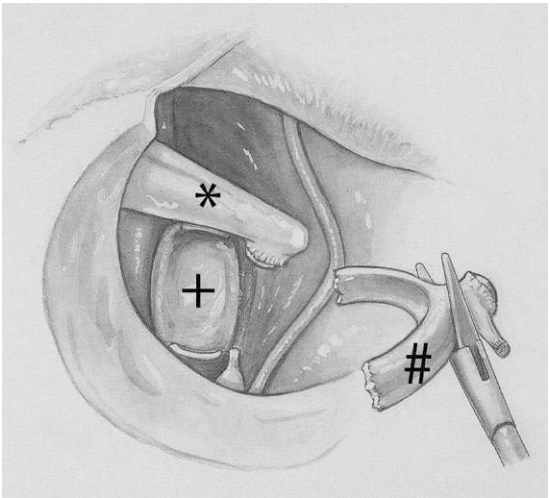
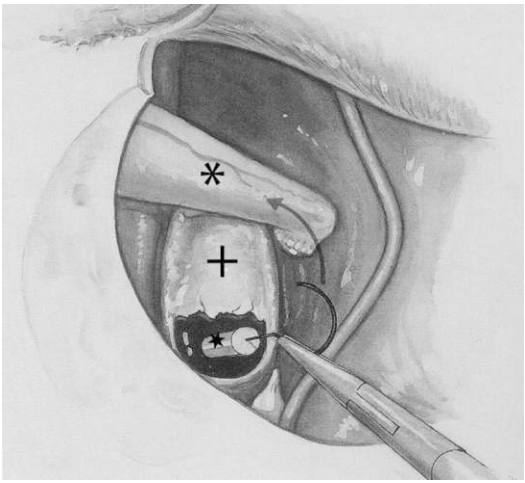
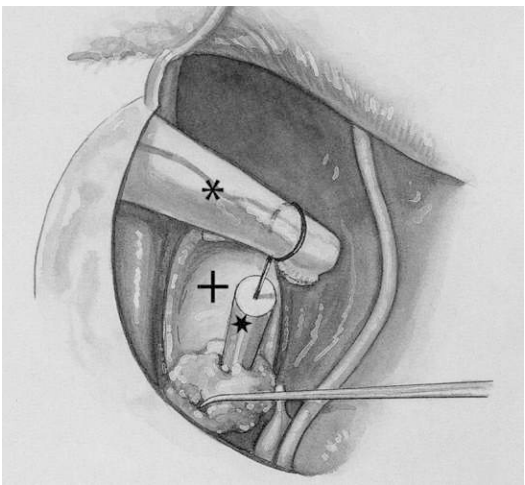
Illustrations:



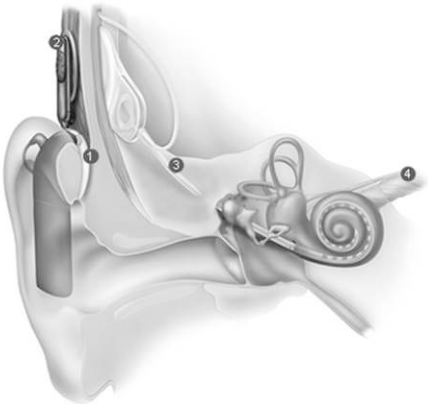
Ill. 1: Removal of the supra structure of the stapes #
(long extension of the incus ⁎, footplate of the stapes +)
From: Plester, Hildmann, Steinbach (1989) Atlas der Ohrchirurgie.
Kohlhammer Verlag, Stuttgart



Ill. 2: Insertion of the prosthesis ✶ into the perforation
of the footplate of the stapes +
From: Plester, Hildmann, Steinbach (1989) Atlas der Ohrchirurgie.
Kohlhammer Verlag, Stuttgart



Ill. 3: Fixing the prosthesis in place ✶ on the long process of the incus ⩙
and sealing with connective tissue
From: Plester, Hildmann, Steinbach (1989) Atlas der Ohrchirurgie.
Kohlhammer Verlag, Stuttgart



Ill. 4: Cochlear Implant
1 Sound processor, 2 transmitter coil,
3 implant with electrode array, 4 auditory nerve
Source: https://www.cochlear.com/de/startseite/hoeren-und-hoer verlust/hoeren-und-hoerverlust/behandlungsmoeglichkeiten/cochlea-implantate

Beethoven –
politically and cosmopolitically

Chapter 10

The political Beethoven

Eleonore Büning

For around 195 years, the music of Ludwig van Beethoven has been in the service of politics. What did and does its task consist of for each political class concerned? Did it "only" serve representational purposes, in the sense of a self-celebration of the rulers, as a propaganda instrument for the added confirmation of their fullness of power, or retention of their power, as it has been the task of the fine arts since time immemorial, since antiquity? Or is there something else behind this? Secondly, it can be asked: why or to what extent is especially Beethoven's music suited to this? And thirdly: which pieces of music are concerned here?

The last question is easy to answer. Apart from the Vienna Congress, which convened to restore the new European order in 1814/15 and for whose celebratory hours Beethoven composed vocal music specially, those works of Beethoven most frequently used for political aims belong exclusively in the realm of instrumental music.

Latest since the development of the bourgeois music festival movement in the pre-March period, it is the symphony with choruses, No. 9 in D minor, that leads the way.[1] Never, for example, has the slow movement from the Hammerklavier Sonata Op. 106—a not quite twenty-minute adagio sostenuto of epic length and infinite expanse in F sharp minor—adorned a state occasion. Likewise, to mention two more examples, this applies to the Serenade in D major Op. 8 for string trio or to the four Italian ariettas after Metastasio, Op. 82, both opuses that are rarely performed because they belong to the works that do not fit into the usual reception framework of the heroic Beethoven image. The Ninth Symphony, by contrast, with its cacophonous roar at the beginning and hosanna of humanity at the end, as

well as chorus sopranos condemned to a register that is unsingably high in the final movement, seems clearly to fit only too well (cf. chap. 15). Nowadays, as a result of its long history of performance and impact, it is generally only heard in terms of its end. The melody formed from the simple scale of the final chorus has embedded itself so deeply in the collective memory that it is also recognized by listeners who cannot spell the name of Beethoven. For countless listeners, therefore, what precedes this final movement musically appears to be a detour.

As for the political user surface of the Beethoven brand, several partially bizarre, partially spectacular stories are doing the rounds. The latest case is of the rather touching variety. Donald Trump tweeted after the G20 summit in Hamburg: "*Why did Beethoven only put the choir in the end of symphony no. 9? Could've been a contender. Bad attitude.*" Whether this tweet was genuine or false, is moot. It was, in any case, chased once through all the media villages in the summer of 2017, with the result that it became ever more likely, i. e. it gradually assumed the appearance of the truth. Trump's question comes down to a suggestion as to how Beethoven could have optimized his Ninth: If he had brought the choral finale forward to the beginning of the symphony, the music would have been much more attractive. It is possible that Trump's "music criticism" also appealed directly to many other G20 summit guests from business and politics, who listened to a festive performance of the Ninth Symphony with him on July 7, 2017 at the Elbphilharmonie in Hamburg, while violent riots by climate rescue demonstrators took place on the streets outside. He sat in the front row, in the company of Merkel, Putin, Macron and others, and had apparently almost been unable to endure the Ninth, in particular its length. He slid around on the seat restlessly, changed position, gazed around the auditorium as if looking for someone, whispered with his wife and repeatedly put his right hand into the inner left-hand side of his jacket, searching for the smartphone. Trump, too, applauded vigorously after each of the three first movements of the symphony—always a *faux pas* in the concert hall and truly showing "bad attitude," something the press made fun of, from the Bildzeitung and the FAZ to the New York

Times. *"Eighty minutes sitting still, perhaps Trump's most difficult task,"* was the headline in Stern magazine.[2]

Quite clearly, this politician did not need Beethoven's music. When the "Ode to Joy" finally commenced, this globally-sung, revered and much-worked signature melody, in the fourth movement, in the cellos and basses, Macron first had to point it out to him. We do not know what he whispered to the American president. Perhaps, that meanwhile this was the European hymn being played. And that was something Trump certainly did not need.

To save the US President's honor in terms of middle-class educational values, it should of course be said that during Beethoven's lifetime, too, it was customary for the public to applaud between the movements. It was also common practice in the early stages of the rise of the bourgeois concert for single movements to be performed in the so-called "Great Vocal and Instrumental Concert." Yet from the day the Ninth Symphony was premiered on, writers on music felt compelled verbosely to explain and discuss this unusual piece, which short-circuits two genres and combines a symphony with a cantata: for many first-time listeners this cross-over project was simply too much. Not least with this in mind, in the first half of the 19th century the choral finale was dispensed with in a number of performances and only the first three movements were played.[3] Yet it was precisely this isolated chorus finale and the "Ode to Joy" that then developed its very unique and peculiar "career." Its reputation grew and swelled to a user surface of scale. Beethoven's Ninth is more than just a symphony. It became a projection surface for the most varied interests. It turned into a manifesto, a quarry of ideas, a legacy, a psycho-weapon and a form of counselling, a drug and a hit, but also a national treasure. Friedrich Engels wished to have the "Ode to Joy" as a workers' hymn instead of the Internationale. Joseph Stalin had his totalitarian constitution signed off in 1936 with a performance of the Ninth. One year later, in 1937, Wilhelm Furtwängler conducted the Ninth for the Führer's birthday. Herbert von Karajan transcribed the Joy chorus as a European hymn for brass. In 1949, it sounded forth for the founding of the GDR, East Germany,

whose national anthem "Anmut sparet nicht noch Mühe" to words by Bertolt Brecht was provided with a melody that the composer Hanns Eisler knew to derive from Beethoven's Joy tune: the sequence of harmony and rhythmic pattern of the first four measures is identical, the order of intervals a sequenced inversion.[4] In 1967 the chorus theme from the fourth movement of the Ninth sounded forth at the opening of the NATO headquarters, and in 1990 for the celebrations surrounding German reunification, with a correspondingly altered text: the word "joy" was replaced with the word "freedom." Today, this German-German destiny-laden melody provides material for car commercials and hit parade songs, yet also for the annual Daiku massed-chorus parties with which the New Year is welcomed in Japan (cf. chap. 1), and it circles through space with Voyager as the heritage of mankind. Like every good hit, this lovely melody can be harnessed to any carriage or wagon. And so with this, the opening question would be answered. Yet how did it come about? What is it about this music that everyone thinks they can see their own reflection in it, beyond any political interests?

As early as the Beethoven bicentenary in 1970, the Cologne-based composer Mauricio Kagel had searched for answers to this question. He made a surreal black-and-white film for which, among other things, Joseph Beuys recreated Beethoven's kitchen and Werner Höfer hosted an International Brunch with six journalists from six countries, including renowned experts on the aesthetics of music such as Otto Tomek and Heinz-Klaus Metzger, who tried to explain: "Why is Beethoven's music misused?" and "What can be done about it?" In the meanwhile, Beethoven gets off the train at Bonn Main Railway Station, walks into town, goes to the Beethoven House, to the Rhine, mingles with the people. He pursues the matter himself. But because he is deaf, he does not hear what is said to him. Time and again he hears only his own music, and, because he is deaf, that sounds distorted and warped. From all this, Kagel draws the conclusion: one should no longer perform Beethoven at all these days, or if so, then only still *"as he himself heard his music: namely badly."* Consequently, the soundtrack for the film composed by Kagel is celebrated by a rather measly spa orches-

tra; and, as the credits are faded in, the opening fifths of the Ninth Symphony rise from a drain, in the form of white mist, as if they were poisonous fumes, which is both abysmally nasty and supernaturally beautiful. In this shocking caricature by Kagel, the scale of the transformation and overpainting that this Beethoven work has experienced throughout its reception history becomes clear. Like a lost treasure, it is thus fatally absent for us listeners of the present day, historicist-like. The musicologist Rainer Cadenbach, in the catalog to the Bonn exhibition "Mythos Beethoven," summed this up as follows: *"The history of the impact of Beethoven's music belongs to itself, and we don't have the chance to hear his symphonies again as if there had never been a Beethoven myth."*[5]

In this, the fact that the astonishing political career of the Ninth throughout the 19th and 20th century may in fact be due to the emphatic message contained in Schiller's text, more so than to the melody invented by Beethoven, is no consolation. Yet with this, at least, the second opening question would be answered, namely: the melody itself is not guilty. No political potential can be determined from these notes alone. The polyvalent misuse could equally well have applied to another melody, for example, that of *"Silent Night, Holy Night."* That one had been composed by a certain Conrad Franz Xaver Gruber, village organist in Oberndorf near Salzburg, in 1818. It did not make Gruber famous—just as another setting of Schiller's text written by the 17-year-old Franz Schubert has largely remained unknown.

Turning the question around: did Beethoven need politics? How is his viewpoint as a *"homo politicus"* to be located in his time, in the context of the course of time in his day? And how does it differ from that of other intellectuals and artists who likewise lived in that turbulent, unsafe transitional period, jolted by wars? On the one hand, Beethoven was good friends with adherents of the self-destructive ancien régime, while on the other hand they financed his livelihood (cf. chap. 2). And at the same time, at least in the second half of his life, he was declared the leading figure of a new age and a figure to identify with for the bourgeois society that was just organizing and de-

fining itself. Beethoven is regarded to the present day as one of the first prototypes of the free artist, who creates works in his own right as an original genius, without a commission, occasion or purpose. This very widespread view belongs to the apparently indestructible misunderstandings stored in the large Beethoven box of kitsch, along with all kinds of other posthumously invented anecdotes and quotes, images, wishful thinking and projections. Slumbering in this box, for example, are such famous sentences as: *"What do I care about his wretched violin!"* or *"Thus does fate knock at the gate"* or *"Through night to light"* or *"Music is a higher form of revelation than all wisdom and philosophy"*—sentences ascribed to Beethoven, which he never uttered, however. Much used, but also wrong, are the various broader concepts and attributions such as: "*Beethoven, the lonely revolutionary"* or *"Beethoven, the titan"* and *"the bad-tempered Beethoven" and moreover, "Beethoven, the miser"* or *"Beethoven, the confirmed bachelor"* as well as *"Beethoven, who couldn't write any vocal music"* etc. People always rummage around in this Beethoven box every time a Beethoven anniversary comes around, and in 2020, too. This happened in the Beethoven years of 1970 and 1977 as well, and we can expect that it will happen in the Beethoven year of 2027, too, which musicians are already gradually preparing themselves for.

In 1986—not a year commemorating Beethoven—an unusual cleaning-up campaign took place. At the time, six music and art experts led by the afore-mentioned musicologist Rainer Cadenbach, unfazed by the boom in anniversaries, had curated an exhibition in conjunction with the Beethoven House Bonn Society, which they called "Myth Beethoven." For the first time, starting from Max Klinger's marvelous Beethoven monument of 1902, which shows the composer thoroughly fit and half-naked, as an ancient god, sitting on a throne in the pose of a thinker, Zeus' eagle at his side, they faced the question of how this grandiose posthumous sacralization of an artist could have become possible and at what turning point the possible anecdotal overpaintings of Ludwig van Beethoven's life-story and work had become a fake. Around 300 objects from the kitsch box were put under the musicological magnifying glass at the time,

a colorful mixture of art and craftsmanship, literature, caricature, everyday objects and relics. Concerning this, the foreword to the exhibition catalogue reads: *"As an 'idol', Ludwig van Beethoven is a uniquely versatile phenomenon, and the myth which posterity has erected to him and his work as an artistic message in no way remained confined to Beethoven's extraordinary place in music history. He radiates into the areas of ideology, worldview and religion. He was made use of by entirely opposing political systems, by monarchies, democracies and dictatorships [...] and functionalized for the most varied purposes of representation and marketing. The Beethoven myth impacts the present, too, and not only in the latter regard."*[6] This exhibition had a great influence on the research into reception of his music. As it turned out, most of the objects, parameters and projections presented came very much from the 19th century, from the age of idealism. It was at the same time the age of industrialization, the age of national states, but also of the memorial culture, of the Bismarck towers and the first great concert halls. Palace-like bank buildings and opera houses were built. The first complete editions were undertaken. Some of the elements of this Beethoven myth, which was assembled from many different components in the Wilhelminian period, were still romantically transfigured poetic invention. Some of it was vision, wishful thinking, projection into the future. Which does not speak against poetry, even less so against visions and ideals, and certainly not against the need for utopias. And yet: the conception of what idealism is or should be, can no longer be the same, in the 21st century, as in the time of Max Klinger and the Vienna Secession, when Germans still had two world wars and genocide ahead of them.

Ever since—since the aforementioned Beethoven exhibition in Bonn—much has happened. A whole generation of Beethoven researchers has applied itself to politely asking Beethoven to step down from the pedestal, to removing the overpaintings, to reexamining and reanalyzing sources, to placing the composer in his historical period and his conceptual world, and not least of all, to question his music accordingly. That is occasionally a laborious business, requiring many footnotes, and the

process is by no means complete. Nonetheless, several important books and essays have been written, for example by Christina M. Stahl on the political exploitation of the Ninth Symphony by both West and East Germany during the period that Germany was divided[7] or the one by Hans-Joachim Hinrichsen on Beethoven's reception of Kant and on sonata form[8] or those by Marie-Elisabeth Tellenbach[9] and Rita Steblin,[10] who evaluated the letters from Countess Deym that reemerged in 1953 and identified the "immortal beloved," so that it actually became possible at last that the only daughter of the confirmed bachelor Beethoven, "Minona," has become the eponymous heroine of an opera.[11] The current Beethoven exhibition in Bonn in 2020 was concerned with the "*man behind the myth.*" The media, too, prefer in this jubilee year a refreshingly pathos-free image of Beethoven, dimmed down to a commensurable dimension of a fellow-being. "Ludwig and Me" or "My Ludwig," are the keywords among celebrities who have been polled. Now, each generation has created its own rhyme with the traditional image of Beethoven. But the recent tendency to "humanize" and privatize should not be confused with depoliticization. After the Congress of Vienna, when the Biedermeier era began, Beethoven was still a fellow-being, someone to visit, to talk to, even to address with the familiar "Du" form. And yet it was precisely at this time that the reception process began that led to him being placed on a pedestal by those very same contemporaries. Please note: gathering curls and cultivating hero worship are not mutually exclusive.

One of the authentic Beethoven anecdotes is that of the fish meal in the "Zur Rose" inn in Nussdorf near Heiligenstadt. Christoph Kuffner, later editor of the "*Wiener Zeitschrift für Kunst, Literatur und Mode*" and lyricist of the Choral Fantasy Op. 80, often met with Beethoven in the summer of 1817 at midday and asked him, on one of these occasions, what his favorite symphony was: "*Quite cheerfully Beethoven answered, 'Eh, eh, the Eroica.' "I would have thought the C minor," Kuffner said. "No, the Eroica," Beethoven retorted.*"[12]

Unlike the Fifth Symphony, which Kuffner brings into play as an alternative, Beethoven's Third Symphony is not an instru-

mental piece for which an extra-musical title was only penned later. It is a programmatic symphony, comparable to the Pastoral Symphony. The Pastoral does not portray a particular village; it concerns rather the idea of the rural, and accordingly the Eroica concerns the idea of the heroic. The Napoleonic wars, which shook Europe at the time, play only an indirect role. Unlike Beethoven's first symphonies, there are no longer any references to French revolutionary music in this work, and certainly no battle painting as we know it from the tone paintings of the Baroque period—or from Beethoven's "Wellington's Victory." The idiom of the *"elan terrible"* is also already integrated into Beethoven's symphonic musical language at this point in time; he avoids specific quotes. After two violent tutti beats, the first movement *"Allegro con brio"* begins with a military signal, which is sung in friendly three-four time by the cellos and immediately reworked further. The second movement officially declares national mourning: *"Marcia funebre. Adagio assai."* Surprisingly, after this first-rate funeral, the hero goes hunting, borne by three horns, in the trio *"Scherzo Allegro Vivace."* Furthest removed from the war is the *"Finale. Allegro molto"*, with splendidly bracketed variations on a contradanse which, as a *"Prometheus"* theme, had already been treated in ballet music and piano variations up to that point.

Beethoven had personally given the piece a title; he had repeatedly written down the subject, and, at the first printed edition, emphasized the title, *"Sinfonia eroica,"* with the additional comment: *"composta per festeggiare il sovvenire di un grand Uomo."* Napoleon Bonaparte is still considered the most popular candidate for this unknown "great man" who is to be celebrated here. At least during the composition process, he was up for debate as the person to whom the work is dedicated. To the realm of legend, however, belongs the anecdote that arose after Beethoven's death, which we owe to Beethoven's student Ferdinand Ries. He writes: When Beethoven learned of Napoleon's coronation as emperor in May 1804, he tore up the title page of the Eroica score, threw the shreds on the floor and shouted: *"He is nothing more than an ordinary man! Now he too will trample all human rights underfoot, indulge only in his*

ambition; he will now place himself higher, like all others, becoming a tyrant!"[13] People like to quote that. But the said title page is kept by the Gesellschaft der Musikfreunde in Vienna, it is intact. Only one hole from rubbing out is visible – and underneath it is written, delicately but clearly, in pencil by Beethoven's own hand, "written on Bonaparte." He must have changed his mind just before going to press. It may also be that he himself had wished to erase these words "*intitolata Buonaparte*" and busied himself with it so much that a hole had resulted. Or he did not cause the hole himself, it arose later. So much for the facts. Ries did not invent the manly, beautiful scene of the score-ripping until decades later, in 1838, arising from the spirit of the pre-March, that is, after the French July Revolution and far removed from Beethoven's thinking around 1802. The love of the fatherland that had inspired Ries and Beethoven and the other Viennese intellectuals during the Wars of Liberation had in the meantime become nationalism; the Code Civil and the principles of equality and fraternity were absorbed in the ideas of liberalism and socialism.

There are more candidates for the unknown "*grand Uomo*": Arnold Schering, for example, claimed that Beethoven had been thinking during the composition of the Eroica of the Trojan War and Homer's "*Iliad*".[14] According to this, the "*Marcia funebre*" was dedicated to Hector, while in the Scherzo we hear the competitions in honor of the fallen Patroclus, etc. Hector Berlioz, for whom the Eroica was to become a key experience for his own composing, stuck to Virgil's "*Aeneid*".[15] And others are under discussion, demi-gods from Antiquity such as Alexander the Great or historical war heroes, including the "Prussian Apollo" Prince Louis Ferdinand, who was a personal friend Beethoven and who fell in the battle near Saalfeld in 1806, which occurred nine days before the date on which the publisher's advertisement for the "Eroica" (without the Buonaparte note, but with the full subtitle) was first published in the newspaper in Vienna. In short: to the present day, the question of the subject of the programmatic symphony called "Eroica" has not been fully clarified. It was the conductor Arturo Toscanini who for political and polemical reasons furiously turned his back on

this debate in the 1930s with: *"For some it's Napoleon; for others it's Hitler or Mussolini. Bah! For me it's simply: Allegro con brio."*[16]

Yet it is not so simple. The programmatic symphony, in particular, poses the question of to what extent the music itself is permeated with thoughts outside of the music. How much does the "Eroica" reliably announce Beethoven's political ideals? What did he think, and at what point in time, of Napoleon, and of the Napoleonic Coalition Wars, in which he was personally involved, in 1796, as a registered soldier in the Viennese Voluntary Corps on the side of Austria? What were his thoughts on his native country and fatherland, on princes or heroes, or even on human rights and the consequences of the French Revolution for bourgeois civil society?

There are entries in Beethoven's diaries which testify to the fact that, at an early age, he arrogated to himself the teachings of the Enlightenment that he had got to know as a pupil and student in Bonn: *"Fight for justice, and for the daughter of justice, eternal freedom that is glorified by the law"* can be read, or: *"Is the genuine, real person a slave of the environment or free?"*[17] In 1793 he writes a quote from Schiller's "Don Carlos" into a young lady's family album: *"Do good where you can, love freedom above all else, never deny truth, not even on the throne."*[18] In one of his letters to the trusted friend Count Nikolaus Zsmeskall, we read: "And then I still have the freedom to say yes or no. Freedom!!!! What more does one want???"[19] Admittedly, Beethoven had already emphatically said "no" to freedom at this time. He wrote this letter in 1814, just as the political potentates were arriving in Vienna for the Congress. And thereupon composed one commissioned work after the next, in order to celebrate most humbly the high-ranking gentlemen. Whatever he read, however he saw himself, despite his sympathies for the French Revolution, Beethoven nonetheless lived his whole life under the spell of the old, declining society. Time and again he tried to gain permanent employment at court. He was on the payroll of Archduke Rudolph, with an apanage of 1,800 gulders, from 1808 until his death. Previously he was the house pianist and protégé of Princes Lichnowsky, Rasumowsky and

Lobkowitz, who took care of his basic income. Yes, Beethoven —although he invented the Promotheus and Eroica themes and despite his liberation opera, despite the choral piece WoO 117 "The Free Man" by Gottfried Konrad Pfeffel, despite his "Ode to Joy"— remained materially unfree, inasmuch as he was fed by the ancien régime throughout his life. On the one hand, he was close friends with some of the Viennese nobles who sustained him, but there were several whom he despised (cf. chap. 2). On the other hand, he liked to believe the rumor that he himself was of blue-blooded descent. And once again, on the other hand, he knew very well the value of what he created as an artist. In short: Beethoven's political outlook was so ambivalent, probably like most of the bourgeois intellectuals during this interim period. That all men are brothers and to be treated equally—this new, bourgeois guiding principle he certainly did not pass on to the lower classes, to his maidservants, for examples, or his housekeepers, copyists or messengers.

This essay is the written, reworked version of a free lecture held at the "Beethoven-Fest der Albert Konzerte" in Freiburg, February 15th 2020.

Adnotations

[1] Cf. Wolfgang Robert Griepenkerl: Das Musikfest oder Die Beethovener. Leipzig 1838, as well as Andreas Eichhorn: Beethovens Neunte Symphonie. Die Geschichte ihrer Aufführung und Rezeption, Kassel 1993.

[2] Anna-Beeke Gretemaier: Das G20-Konzert in der Elbphilharmonie. Quoted from the publication Stern-Online, July 8, 2017.

[3] Christina M. Stahl: Was die Mode streng geteilt? Beethovens Neunte während der deutschen Teilung. Mainz 2009, p. 45.

[4] Cf. Hartmut Krones (ed.): Hanns Eisler – Ein Komponist ohne Heimat? (= Writings of the Wissenschaftszentrum Arnold Schönberg, vol. 6) Vienna 2012.

[5] Rainer Cadenbach: Einleitung zu: "Mythos Beethoven." An exhibition of the Verein Beethoven-Haus Bonn, exhibition catalog. Laaber 1986, p. 9.

[6] Cadenbach, loc. cit.

[7] Christina M. Stahl (2009) Was die Mode streng geteilt?: Beethovens Neunte während der deutschen Teilung. Schott Campus, Mainz.
[8] Hans-Joachim Hinrichsen (2019) Ludwig van Beethoven – Musik für eine neue Zeit. J. B. Metzler Verlag, Stuttgart, Weimar.
[9] Marie-Elisabeth Tellenbach (1983) Beethoven und seine "Unsterbliche Geliebte" Josephine Brunswick. Atlantis Musikbuch.
[10] Rita Steblin (2019) New Evidence for Josephine as the "Immortal Beloved" Involving Beethoven and England in 1818. Musical Times 160 (1947):1–27.
[11] Cf. Detlev Brandenburg: Die Beethoven-Connection. Zur Uraufführung von Jüri Reinveres Oper "Minona" am 25. Januar 2020 am Theater Regensburg. In: Die deutsche Bühne, January 26, 2020.
[12] Beethoven aus der Sicht seiner Zeitgenossen, in Tagebüchern, Briefen, Gedichten und Erinnerungen, vol 1. Ed. by Klaus Martin Kopitz and Rainer Cadenbach, Munich 2009, p. 536.
[13] Franz Wegeler, Ferdinand Ries: Biografische Notizen über Ludwig van Beethoven. Koblenz 1838, p. 78.
[14] Arnold Schering (1933) "Die Eroica, eine Homer-Symphonie Beethovens?" Neues Beethoven Jahrbuch 5, pp. 159–177.
[15] Hector Berlioz xx.
[16] Harold C. Schonberg: Award for Music Criticism, in: Distinguished Criticism on Theater, Film and Television. Ed. by Heinz- Dietrich Fischer, Zurich 2019, p. 10.
[17] Beethoven Tagebücher xx.
[18] Beethoven's family album entry for Johanna Theodora Vocke, of May 23, 1793, p. 304.
[19] Beethoven to Nikolaus von Zmeskall, January 1814. Briefwechsel-Gesamtausgabe, ed. by Sieghard Brandenburg, No. 693, 3/p. 6 sq.

Chapter 11

"The best product that we can boast of" – Beethoven in the USA

Gregor Herzfeld

Introduction

In a somewhat exaggeratedly pithy form, the history of European concert music ("western concert music") since the first third of the 19th century could be described as a history of engagement with the music of Beethoven. Like every platitude, this is for sure too sweeping and in its scope does not reach every area equally; for some genres (symphonies, string quartets, piano music), it is more applicable, while for others (opera, operetta, church music) less so. Beethoven's music had an effect, however, that reached far beyond its achievements in compositional technique, into the realms of how we perceive and assess music in general, so that Beethoven was able to become the benchmark of aesthetic attributions of meaning with a status verging on the iconic.[1, 2] What holds true for Europe can also be observed on the other side of the Atlantic, to the extent that the USA began to build up, or at least expand, a music and concert scene based on the European model. By Europe becoming the model, Beethoven as an essential point of reference shifted to the center of musical attention, too.

In the following, I would like to provide a short overview of the developments that the American relationship with Beethoven underwent from the 19th through to the 21st century. In this, I follow one narrative (among possible others) that describes a process of making a hero out of Beethoven in the 19th century, which, with the gradual repudiation of the "European model" in the 20th century is turned into the opposite, so to speak, into a kind of "demonization" of the one-time hero,

and is then guided towards a state of balance under the banner of postmodern cool-headedness.

Michael Broyles, in his study "Beethoven in America," has mapped out the basic features of American reception of Beethoven and gathered key sources, especially concerning the veneration of Beethoven as "ubiquitous icon in virtually all corners of American society"[3], providing context and comment upon them. His focus lies on engagement with the composer in the areas of publications, media and scholarship. This examination, which otherwise is very comprehensive and penetrating, leaves gaps in terms of the relations of individual prominent composers and musical personalities to the "Viennese master." The crass rejection—itself a sign of a strong connection—that Beethoven experienced in some circles of the American avant-garde of the 20th century can therefore only be touched upon by Broyles at best. For this reason, I wish to turn my attention in the second half of this article to precisely that movement.

Landing

Beethoven's arrival in the USA can be dated—according to current sources—very precisely to April 10th in the Holy Week of 1805. In Charleston, South Carolina, the conductor of German heritage, Jakob Eckhard (1757–1833) organized a concert for the St. Cecilia Society, which was opened with a "Grand Overture" by Beethoven. According to Broyles, it can be assumed that with the "Overture" is meant Symphony No. 1 Op. 21, which had premiered in Vienna on April 2, 1800, almost exactly five years previously, in a performance conducted by the composer. At the beginning of the 19th century, Charleston was a rather well-off city, which stems from the geographical location by the sea and river, the prospering plantations and, last not least, the slave trade. Cultural life blossomed on these economic foundations, which, as a consequence, suggests that the possibility of presenting a brand-new symphony, expensive to repro-

duce, had come about in no small measure due to the exploitation of enslaved workers.

"American Hero"

Up until the mid-19th century, several works of Beethoven, such as the symphonies (above all, the Fifth), sonatas, string quartets and in particular the oratorio "Christ on the Mount of Olives" ensured not only their place in the concert repertoire of the east coast cities; they increasingly won the encouragement of diverse leading magazines, too, which, in rich language and metaphor, reinforced the image of Beethoven's music as tremendous, rough and thus moving, occasionally superhuman, indeed metaphysical. A special role is played here by two authors who were significantly close to the literary-philosophical movement of American transcendentalism: Margaret Fuller (1810–1850) and John Sullivan Dwight (1813–1893); significantly so, as the circle around the preacher, poet and philosopher Ralph Waldo Emerson (1803–1882) had developed tendencies towards hero worship, on the one hand, and a subsequently prominent Beethoven admirer, Charles Edward Ives (1874–1954), chose precisely this intellectual current as the starting point for a form of modern American music, on the other. Dwight took a stand against any form of musical Americanism in favor of the idealization of European classics. Onto Beethoven he projected the chance of "civilizing" American culture and of bringing about human progress: "The music of Beethoven, we have said it more than once, is a presentiment of coming social harmony, a great heart's confession of its faith, one of the nearest and closest echos of the approaching footsteps of the good genius of Humanity."[4] Unlike Emerson or Henry David Thoreau (1817–1862), he had no faith in an autochthonous creativity "made in America," relying instead entirely on the model character of Austro-Germanic music. In this context, Beethoven was stylized by him not just as a genius, but as a superhuman prophetic hero, as well: "Perhaps no music ever stirred profounder depths in the

hearer's religious consciousness, than some of the great orchestral symphonies, say those of Beethoven."[5] In Dwight's image of Beethoven, all the elements of monumental, artistic-religious, genius-centered 19th century musical aesthetics merge in an almost rapturous way. The fact that he followed not only European convictions, but also took up motifs of emergent American thought is shown by the sidelong glance at his mentor Emerson. The latter adhered to the "Great Men Theory," which Thomas Carlyle (1795–1881) had advanced in a lecture cycle held in 1840 and published in London in 1841 as "On Heroes, Hero-Worship, and The Heroic in History." Unlike the critical respondents Leo Tolstoy (1828–1910) and Herbert Spencer (1820–1903), Emerson associated himself with this theory through a similar lecture cycle begun in 1845 concerning "his" six "Representative Men" (Plato twice, Emanuel Swedenborg, Michel Montaigne, William Shakespeare, Napoleon and Johann Wolfgang von Goethe). For Emerson, a "Great Man" is someone who "inhabits a higher sphere of thought, into which other men rise with labor and difficulty."[6] Such individuals serve humanity through inspiration, through their degree of perfection in their actions (knowledge, wisdom, emotional depth) and through the birth of ideas. They serve as an example and thus become historical models for the advance of the "genius of humanity."[7] This conception of history and even the choice of words make it clear that the music critic Dwight transfers Emerson's approach to Beethoven as the "Greatest Man" among composers.

Musical Revelations

Many decades later, at a point when the admiration of "Great Men" was already crumbling on account of the shocking experience of the First World War, among others, the transcendentalist among American composers, Charles Ives (1874–1954), revived this idea once again and projected it onto two of his "heroes," Emerson and Beethoven. While he considers Emerson

the ultimate truth seeker and prophet of countless revelations, he finds that writer's musical counterpart in Beethoven.[8] In his "Essays before a Sonata" (1921)—portraits of transcendentalist authors which accompanied in literary form the publication of his Piano Sonata No. 2, titled "Concord Sonata"—he compares Emerson's revelatory epiphanies directly with Beethoven's musical flashes, which in the most inspired and rare moments suddenly came close to the divine, combining transcendent beauty with universal significance.[9] The "Emerson" essay finally ends with the reference to the main motif of Beethoven's 5th symphony, which he describes as an oracle, in that it conveys the message of fate as this kind of Emerson-like, inspired, epiphanic moment, a spiritual message of the "soul of mankind" on the cusp between the human and the divine and the union of the two.[10] Ives' heroization of Beethoven is contrasted, however, by his anti-elitist, quasi-democratic attitude towards styles and so-called stylistic heights. For in the same breath with which he pushes Beethoven to the brink of the divine, he places next to that products of "simpler souls": "In the history of this youthful world, the best product we can boast of is probably Beethoven, but, maybe, even his art is as nothing in comparison with the future product of some coal miner's soul in the forty-first century." For him it evidently has less to do with the artistic aspect of the music, rather almost the opposite, with the "rightness" and "truthfulness" of its felt, experienced and experienceable quality. For that reason, not only do simple hymn melodies or popular songs sound in his Concord Sonata as equal in value to Beethoven's "fate motif"; Ives even goes so far as to use the closeness in terms of material of those four notes with the two church hymns "Martyn" and "Missionary Chant," music from a completely different field, in order to achieve a cross-disciplinary link and to that extent a multiple coding of the same musical form. The excessive veneration of Beethoven inherited from the 19th century was already fractured in the early 20th century by doubts about the exclusivity of his musical qualities, a trend that in part continues or even becomes radicalized.

Deadly for music

Around the mid-20th century, Beethoven, or at least a concept of music that was associated with him, was exposed to intense rejection in the USA, too. Representatives of the so-called New York School of Music can be cited as an example of this refusal of Beethoven. In 1948 John Cage (1912–1992) held a lecture at Black Mountain College, mostly to refugees from Germany, which he titled "Defense of Satie." Cage projected onto Erik Satie (1866–1925) and Anton Webern (1883–1945) his own efforts to structure music from the time-based parameters (rhythm, duration, and length of the compositional parts with relation to the whole). As the antipode to these efforts, he cited Beethoven as the representative of a culture of music from the 19th century based on harmonic progression. Cage takes this categorization to extremes with an either-or question: "Was Beethoven right or are Webern and Satie right?"[11] And his response is clear: "I answer immediately and unequivocally, Beethoven was in error, and his influence, which has been as extensive as it is lamentable, has been deadening to the art of music."[12] His fixation on harmonic structures has brought musical history within the last 75 years after him to a kind of dead point, to atonality, i.e. to the collapse in the foundation of its development of tonal harmonics. The "Beethoven Concept" must therefore be given up and attention be directed to the time-lengths, which can also contain silence. Notably, Cage, in order to describe this neuralgic point of his own concept, does not banish every European model, but rather positions Beethoven as a cipher for a certain notion of music opposing Satie and Webern, in order to carve out eventually a historical link for himself. Morton Feldman (1926–1987), in contrast, follows ostensibly the strategy of fending off historical links; ostensibly, because his essays, accompanying texts and interviews are teeming with references to the history of art, literature and music, nonetheless. In order to illustrate his intentionally ahistorical standpoint, Feldman must repeatedly refer to history. One constant in this is Beethoven. Feldman makes clear his fundamentally spurning attitude in 1969 in the text "Between Cate-

gories."[13] His concern here is to plead for a kind of music that exhibits the fewest possible constructive elements, in order to form the largest surface possible. To demonstrate what he means by a form of music with a surface, he quotes a telephone conversation with the concept artist Brian O'Doherty, who tried to reach a definition: "'A music that has a surface *constructs* with time. A music that doesn't have a surface *submits* to time and becomes a rhythmic progression.' 'Brian,' I continued, 'does Beethoven have a surface?' 'No,' he answered emphatically. 'Does any music you know of in Western civilization have a surface?' 'Except for your music, I can't think of any.'"[14]

Constructed music such as Beethoven's does not explore time, rather is a question of timing: "Beethoven, in such works as the *Hammerklavier* [sonata], illustrates this perfectly. All the mosaics, all the patch quilt juxtaposition of ideas happen at the *right time*. One feels one is being continually saved. But from what? Boredom perhaps."[15] In Feldman as already in Cage, Beethoven's music becomes the example of a "wrong" treatment of musical time. Unlike Cage, Feldman blames this on the construction of music along an overriding notion of time passing. What Feldman wants to achieve, by way of contrast, is "Time Undisturbed," "Time in its unstructured existence" and this can only be achieved through a "Life without Bach and Beethoven."[16]

Universal bringer of peace

This repudiatory engagement with Beethoven should not disguise the fact that the composer has experienced great popularity in the USA in the 20th and 21st century, too. Concert programs, repertoires, auditoriums, conference halls and cinemas were and are filled with the sounds of his music. One of the important bridge-builders between European and American music, Leonard Bernstein (1918–1990), was always a Beethoven enthusiast. After a decidedly American prologue to his career, both in terms of composing and conducting, he increas-

ingly devoted himself from around 1950 to that composer's oeuvre. So, in 1954, he began his sensational television cycle "Omnibus," which taught about music, with a spectacularly staged analysis of the 5th Symphony, in order to acquaint a non-expert audience with Beethoven's compositional process with the aid of sketches. His activities in the Beethoven year of 1970 formed a further high point, in which he produced the film "Beethoven's Birthday. A Celebration in Vienna" at original locations (e. g. at Theater an der Wien (TAW)), performed the 9th Symphony with the Vienna Philharmonic and the Boston Symphony Orchestra, and staged Fidelio with Otto Schenk on the TAW stage. His series of Young People's Concerts about Fidelio published at the same time shows that Bernstein, in the tradition of humanist visions of the 19th century, did not see in Beethoven the European antithesis of a self-seeking American musical culture, but rather a universally understandable, aesthetic peace-bringer and (religious) "donor of love." This approach culminated in the Fall of the Wall concerts of December 23rd and 25th 1989, when Bernstein conducted the "Berlin Freedom Concert" in the Berlin Philharmonie and Beethoven's 9th Symphony in the Schauspielhaus, whereby the title of the final was changed from "Ode to Joy" to "Ode to Freedom", and the line "joy of the beautiful spark of the gods" was altered to "freedom of the beautiful spark of the gods". The concerts were followed on screen by millions of viewers in more than 20 countries.

Inspiration for new music

So does Beethoven symbolize rather connection, unification, instead of separation and denial, also with regard to the relationship between the musical cultures of America and Europe? A glance at recent music history may confirm this. John Adams (* 1947), for example, after his minimalist beginnings, increasingly turned towards the traditions of European concert and opera music: Schönberg ("Harmonielehre"), Wagner ("Amfor-

tas' Wound") and time and again Beethoven, too. Thus he relates in his autobiography "Hallelujah Junction" of a dream, in which Steinway grand pianos overtake him on a Californian highway, which instead of engine noises give off chords in E flat major and B flat major: "These were the triads of the heroic flat keys of Beethoven – of the 'Eroica,' of the 'Emperor' Concerto and of the 'Hammerklavier' Sonata."[17] The scenario found its way into his composition "Grand Pianola Music" (1982). In recent years, above all, Adams has increasingly engaged with Beethoven. His Concerto for String Quartet created in 2012 titled "Absolute Jest" seems like a trope about scherzi from Beethoven's late string quartets Op. 131 and 135 and weaves in more "iconic" motifs (symphonic scherzi, Waldstein Sonata, Hammerklavier Sonata). Adams understands the composition as a witty game using imagination and inventiveness. The piano duo "Roll over Beethoven", composed in 2014, is an energetic tour de force through Beethoven's late piano works (Sonata Op. 110 and Diabelli Variations Op. 120). His title suggests that Adams pairs Beethoven with the energy, important for him, and physical vitality of the rock 'n' roll of one such as Chuck Berry (cf. chap. 12).

Since his "landing" in the USA in 1805, Beethoven, his music, the concepts and hagiographies associated with him, have shaped musical and cultural life in the USA. As in Europe as well, the tendency to heroize, worship and offer gestures of humbleness dominate. And even though parallels can certainly be drawn, American musicians and publicists lend their respective stamp to the engagement with the composer. Thus, Beethoven can become both an "American Hero" and visionary of a religiously based democracy and civil rights movement (Dwight, Ives, Bernstein), and a counterpart to an "American way of composing" (Cage, Feldman). Others countered national or regional appropriations by turning—as Bernstein did—the performance of his works in places steeped in history into a utopian promise of a world in peace and freedom. With little ideological baggage, contemporary composers such as John Adams have succumbed to Beethoven. In Adams' case, Beet-

hoven becomes the source of a fresh, playfully musical fantasy, which, linking up with Ives, crosses genre and style boundaries, allowing the liveliness and energy of the "classic" to emerge.

Adnotations

[1] See Eleonore Bauer (Büning), Wie Beethoven auf den Sockel kam. Die Entstehung eines Mythos, Stuttgart 1992.
[2] Andreas Eichhorn, Beethovens Neunte Symphonie. Die Geschichte ihrer Aufführung und Rezeption, Kassel et al. 1993 (Kassler Schriften zur Musik, vol. 3).
[3] Michael Broyles, Beethoven in America, Bloomington 2011, p. 3.
[4] John S. Dwight, "Music Review: Music in Boston during the Past Winter. No. IV," in: Harbinger 1/12, 1845, p. 194.
[5] Ibid., "Music," in: Aesthetic Papers, ed. by Elizabeth P. Peabody, Boston / New York, 1849, p. 32.
[6] Ralph Waldo Emerson, "The uses of Great Men," in: Representative Men. Seven Lectures (The complete works of Ralph Waldo Emerson, vol. 4), ed. by Edward Waldo Emerson, Boston / New York 1904, p. 6.
[7] Ibid., p. 32.
[8] This combination Ives could already find with Dwight, too, when the latter writes that Beethoven and Emerson "came in, it may be said, together." (Dwight, "The History of Music in Boston," in: The memorial History of Boston, ed. by Justin Winsor, Boston 1881, p. 427).
[9] Charles Ives, Essays before a Sonata, The Majority, and Other Writings, New York 1961, p. 30.
[10] Paraphrase of the final paragraph from "Emerson," in: ibid., p. 36.
[11] John Cage, "Defense of Satie," in: John Cage, ed. by Richard Kostelanetz, New York 1970, p. 81.
[12] Ibid.
[13] Morton Feldman, "Between Categories" (1969), in: Give My Regards to Eighth Street. Collected Writings, ed. by B. H. Friedman, Cambridge 2000, p. 83–89.
[14] Ibid., p. 85.
[15] Ibid., p. 87.
[16] This the title of a 1964 essay, ibid., pp. 15–18.
[17] John Adams, Hallelujah Junction. Composing an American Life, New York 2008, p. 117.

Chapter 12

Ode for Elise in the Moonlight. Pop meets Beethoven

Michael Custodis

Even though musicology is sometimes a little hesitant to describe Ludwig van Beethoven with pop vocabulary and pithy headlines, one glance at current magazines or the daily papers is enough to dispel any doubts on the matter. Here we can read of "Ludwig the Great" as a tragic genius (Spiegel Online, November 2, 2019), we learn on the 250th birthday of a "popstar," why "the whole world worships him to the present day" (Der Spiegel, volume 49 of November 30, 2019), and learn in the weekly newspaper Die Zeit everything about "Beethoven, the rebel" (edition of January 2, 2020), each time with trendily presented cover pictures that greatly recall Andy Warhol's famous screen prints series.[1] Significantly, a thorough description of the traces that Beethoven has left behind in the popular arts of the 20th and 21st centuries still remains to be done, especially in his own domain, music. Chuck Berry's famous slogan "Roll over Beethoven" and Schroeder, the quirky pianist in Peanuts, are fully embedded in the collective memory. However, how Beethoven and his music found its way into popular music has been —a paradox when considering his enormous presence there— relatively unnoticed to date.[2]

Of course, a single manuscript could never hope to plug this gap in the research, containing as it does such extensive and interconnected sub-systems as rock, metal, pop and hip hop, as well as the adjacent fields of film music, cartoons and advertising; jazz, in view of its even greater complexity and longer history of development, forms another system entirely of its own.[3] Nevertheless, by adopting the following hypotheses concerning

pop and rock music, we can at least outline ways in which traces of Beethoven might be systematically followed and classified:

1. With regard to their musical qualities and range, pop and rock adaptations hardly differ from those classical enthusiasts who pursued a form of epigonism in the 19th and early 20th century which is hardly remembered today and which we would now describe as a star cult.
2. Out of the milestones that were reached along the way, a chain of reference points developed in the 20th century that frequently do not point back to Beethoven directly. These often refer to intermediaries (for example, Chopin, Wagner, Brahms, Liszt and Berlioz), whose music in turn was inconceivable without Beethoven.
3. The decisive factor when pop musicians refer to these chains of references is the degree of their own knowledge of Beethoven: the group that has hardly any detailed knowledge of the composer and his music mostly approaches him creatively in an associative and intuitive way. The group of musicians with prior knowledge, in contrast, follows deliberate strategies and is guided in their own artistic intentions by what they previously knew about Beethoven.
4. This knowledge paradigm has a decisive influence on the quality and differentiation of the results: Musicians with little or no previous knowledge often (intentionally or unconsciously) perpetuate key musical and thematic stereotypes that already emerged during the Beethoven era, some of which have since accumulated (for example, political) attitudes that now seem outdated or even problematic. Pop musicians with a high level of previous knowledge, in contrast, begin a refined and often ironic game with these references and stereotypes.
5. In nearly all cases, the exact way in which a decision for a particular musical model came about is almost impossible to reconstruct. Yet, significantly, out of the variety and multitude of Beethoven's compositions, barely a dozen are taken into consideration and only fragments of individual motives are used. In detail these are: the opening of Symphony No. 5

in C minor (Op. 67), the final movement of Symphony No. 9 in D minor (Op. 125) and especially the *Ode to Joy*, the *Bagatelle für Klavier* in A minor (WoO 59), which has become known as *Für Elise*, the opening of the *Moonlight Sonata* as well as occasional references to the second, slow movement of Symphony No. 7 in A Major (Op. 92), as well as to the piano sonatas *Pathétique* in C minor (Op. 13) and F minor (Op. 57, often called *Appassionata*, which does not come from Beethoven).

6. As to the open question of how one can stumble across Beethoven's music unconsciously or by chance, the first clues can be found in music lessons at school, in the use of *Ode to Joy* as the European hymn, and in the field of film and advertising music. That works in popular culture can also become significant reference points is proven by the fame of the feature-length Walt Disney animated film *Fantasia* (1940), which contains a long passage from the first movement of the Symphony No. 6 (*Pastorale*, op. 68), as well as the Beethoven sub-cosmos *A Clockwork Orange* (1962/1972), begun by Anthony Burgess and developed by Stanley Kubrick.

The following short depictions describe three different kinds of musical approaches: Beethoven fan culture with Chuck Berry and Peanuts; de-contextualized quotes in the case of Caterina Valente and Wolf Hoffmann; and fully composed miniatures, taking the example of Ekseption's *The Fifth*.

Chuck's rivals and Schroeder's hero

Many date the Big Bang of Beethoven in pop to the early summer of 1956, when Chuck Berry gifted an unforgettable hymn to the rock 'n' roll revolution, *Roll over Beethoven*. With Berry's catchy song writing and guitar playing and thanks not least to well-known cover versions, primarily that of the Beatles, the song has today found its place in the musical Olympus of rock 'n' roll, listed by the Rolling Stone Magazine in 2004 at number

97 in the 500 "greatest songs of all time," while in the previous year it was honored by the American Library of Congress as part of the "national recording heritage" along with 49 other songs. For a youthful critic of adult culture and at the same time a herald of the black civil rights movement such as Berry, the name of Beethoven stands here for all those values, norms and goals that seem neither worth aspiring to nor holding on to. Inspired by his older, piano-playing sister, Berry makes his lyrics focus on the firepower of the young mass media of the jukebox and radio, on whether the local station's DJ will hopefully soon play this single: "Well I'm-a write a little letter, I'm gonna mail it to my local D.J. [...] Roll over Beethoven and tell Tchaikovsky the news." For this classical musician and his romantic successor have long since no longer throbbed to the pulse of the time, in which a new virus runs rampant, turning music on its head: "I got the rockin' pneumonia, I need a shot of rhythm and blues. I caught the rollin' arthritis."

If we look for a similar topos in the popular parallel universe of American cartoons—

a boy and a girl arguing over Beethoven—we find it in Charles M. Schulz, who already began to publish his first Peanuts stories six years earlier in daily newspapers. With the figure of the introverted Schroeder, who first appeared in 1951 and who likes best of all to practice his toy piano with its painted keys (when he is not playing in Charlie Brown's baseball team), Schulz created the prototype of a nerd, who prefers his passion for Beethoven to the advances of the tomboy sister of Linus and Rerun, Lucy van Pelt. Even though it is only an assumption that Chuck Berry knew Peanuts, and thus remains a moot point as to whether this fictive constellation actually flowed into the description of his own situation regarding his sister, Schroeder's worship of Beethoven still matches pretty well Chuck Berry's implication of Beethoven in white middle class culture. In 1964 Billy Wilder once again took up these images in his comedy *Kiss Me, Stupid* as follows: 1) Good music is notated and thus classical, 2) despite the defeat in the Second World War, German culture heritage and its representatives were not considered political contaminated per se, especially Wilhelm Furtwängler.[4]

Even though Charles M. Schulz personally preferred the music of Johannes Brahms, he turned Schroeder into a Beethoven disciple, as in this case the global veneration offered the most ironic, yet affectionate, catchwords. Schroeder's musical passion seems likable even today, as this podgy Beethoven fan was depicted not as a Germanic-minded reactionary, but rather as an ambitious piano virtuoso, whose passion equally encompasses those fans of Beethoven, Mendelssohn, Brahms, Chopin, Bartok and Rachmaninov. Moreover, the classical music lover Schulz did not forget those like-minded music connoisseurs within his audience, occasionally giving Schroeder cryptic one-liners, like, for example, when the character praised the 10th movement from Sinding's Op. 32, No. 3. Behind this unassuming opus number is concealed Christian Sinding's *Rustle of Spring* (1986) and it makes us smile when the inventor of Peanuts has his little Beethoven hero quote a piano piece which, while extremely popular at the time, had just one movement, not ten.

De-contextualised *Elises*

When surveying the numerous references to Beethoven's piano bagatelle *Für Elise*, it is rare to come across new perspectives in the expanses of pop music; more frequently, we encounter superficial musical adaptations of the main theme or quick taglines on the topic of "Beethoven and women." The alternatives, numerically in the minority but all the more original for it, often result from pop's liking for irony, exaggeration, and affirmatory kitsch. One charming example is the track *Rote Rosen sollen blüh'n* (Red Roses should bloom), with which in 1959 Caterina Valente and her brother Silvio Francesco introduced Beethoven into the sound, popular at the time, of Latin American dances, hollowing out any ostensible Beethoven cliché from the original melody. Caterina Valente, born in 1931, is predominately remembered in Germany as a singer of Schlager. However, Valente, the daughter of an accordion player and one of the most famous female musical clowns of her gen-

eration, would already have been able to tell of a turbulent childhood and youth as a war refugee in East Prussia, Russia and Paris. By the mid-1950s, she had already built up an international acting and music career, including regular appearances at prestigious jazz festivals and studio recordings with Chet Baker. With its musical surface of voices singing in parallel thirds and cheerful textual clichés, *Red roses should bloom* met the then longing in post-war Germany for far-off lands and exotic, yet at the same time appropriately chaste experiences. In this, the elegant arrangement by Perry Botkin and the accompaniment by the RIAS Dance Orchestra conducted by Werner Müller provided the necessary musical professionalism to make clear, even up to the present day, the distance between this Beethoven adaptation and the average melodic quotes.

A clearly different and yet no less idiosyncratic *Elise* can be found on the sixth album titled *Metal Heart* (1985) by the Solingen-based heavy metal band Accept. At the time, the lead guitarist Wolf Hoffmann could hardly have guessed that his solo in the track of the same name would not only provide fans of the band with a permanent, favorite moment at live concerts, but would also place Beethoven in the realm of Metal. While classical music could always be heard in his parents' household, the sound of Hard Rock had enthused him early on: "Let your hair grow long, make loud music, have fun, loud guitars – the classics were far away."[5] One melody had always accompanied him, however – Beethoven's *Für Elise*.

Even at school he already played this catchy tune on his first acoustic guitar, which has never let go of him since. When many years later Accept worked with producer Dieter Dierks on their album *Metal Heart*, the moment had suddenly come to immortalize this "brilliant little melody which everyone knows" in a guitar solo: He first plays the familiar sequence of notes with the band before using the striking semitone change of the beginning of E flat to D sharp for a General Pause. During live performances, a public ritual has arisen out of this moment, when the audience carries on singing Beethoven's melody on their own, repeatedly stoked up by Wolf Hoffmann, until he ends the solo with the whole band and returns to the original chorus

of *Metal Heart*. Making a bridge to classical melodies was established and legitimate for both the audience and the music industry in the generation of Hoffmann's hard rock idols, so that numerous and highly varied adaptations of the classics exist by Gentle Giant, Jethro Tull, Keith Emerson, The Electric Light Orchestra, Michael Kamen's New York Rock and Roll Ensemble as well as the Deep Purple members Jon Lord and Richie Blackmore; in the heavy metal scene of the 1980s that followed, however, this demanded courage and the willingness to take a risk. For Heavy Metal had long been staged as a counter-draft to the adult world—like Chuck Berry's rock 'n' roll two generations before—so that admitting to a classical education could seemed like a lazy compromise. But in practice the integration of classical elements into a hard guitar sound does work, due not least of all to such mavericks as the Metallica bass player Cliff Burton, who cited such musical influences as Bach and The Misfits,[6] and such guitar virtuosi as Eddie van Halen and Yngwie Malmsteen, whose love of Bach and Vivaldi is unmistakable.

Hoffmann modified *For Elise* two more times, initially on *Classical* (1997) as a blues number. His life-long dream of playing with an orchestra was to be fulfilled nineteen years later and for *Headbangers Symphony* (2016) he once again used the opportunity to re-work *Für Elise*. If, thanks to *Metal Heart*, his fans were used to hearing the melody from his guitar, this time he left it to the orchestra, in order to contrast the tonal variety of the symphonic apparatus, reduced to a full string section and several brass instruments, with the dynamism of a metal band. After he "had dared, through Beethoven, to step into the world of the classics" twenty years previously, he documented an approach in both his solo albums, one that was very popular with rock musicians, that treated both classical melodies and traditional riffs, turning Thema into catchy heavy metal tunes.

Fully composed miniatures: Ekseption *The Fifth*

When considering concepts closely related to classical music, which sound out the narrow borders of conventional pop and rock music in a riskier way, we encounter imaginative alternative forms and sound aesthetics. Significantly, the demonstrable reference to the classics do not here lead directly back to Beethoven: either the glance goes back even further in terms of the history of composition, in order to find inspiration in the drive of Baroque music, of Scarlatti and Vivaldi, for example, as well as in the polyphonic counterpoint of Bach, in particular. Or, the search for inspiration begins with those composers who have drawn together the sum of Beethoven's sonatas and symphonies, such as Hector Berlioz, Franz Liszt, Richard Wagner, Peter Tchaikovsky, Gustav Holst, Gustav Mahler, Claude Debussy, Richard Strauss and Sergei Rachmaninov. Like a white elephant in the room, this situation would be unthinkable without Beethoven: neither would Beethoven himself be explicable without Handel, Bach, Mozart and Haydn; nor would we be able to understand the outcomes in symphonic, pianistic and compositional terms of the generations to follow without his music. For this reason, Beethoven is a rare, perhaps even unique example, in which the general effect is immense, while the direct reference is restricted to a few works.

This diversity in music tastes became differentiated in the mid-1960s into its own genres in Symphonic Rock and Progressive Rock. After Procol Harum celebrated great success with its Bach-inspired *Whiter Shade of Pale* (1967) and Keith Emerson's rock band The Nice were similarly successful with interpretations of the classics,[7] the Dutch band Ekseption added a Beethoven variant of their own. The initiator was the pianist and organist Rick van der Linden (1946–2006), who had been trained at the Haarlem Conservatory and the Royal Conservatory in The Hague. Van der Linden had been brought in by the band founder and trumpeter Rein van den Broek in 1967. With the typical instruments of a rock band (guitar, bass, keyboards and percussion) as well as a brass ensemble, they initially played a mixture of jazz, rock, Rhythm & Blues and pop that was typi-

cal of the era. When, a year later, they won a recording contract with the Dutch label Phillips and were allowed to record a single, van der Linden's idea prevailed of cutting a rock arrangement of Beethoven's Symphony No. 5 in C Minor (op. 67).

As to be expected, *The Fifth* begins with the famous motif as a sample of the original unison strings. Rick van der Linden's Hammond organ then takes over, supported by percussive accents and the leading voice of the trumpets. With a few transitional chords the strict logic of the C minor symphony opens up for a few moments to Ludwig van Beethoven's next hit, the *Moonlight Sonata*. Now, as a jazz-rock band, Ekseption come into their own and take these components to pieces: introduced by a short passage on the piano in 5/4 time, they rhythmically re-form the triadic theme of the fourth movement of the 5th symphony, not forcing it into 4/4 time, as usual pop formats do, but letting it swing in 6/4 time triplet-style, while the Hammond organ is brought in again. After two and a half minutes, this small universe has been paced through once and *The Fifth* returns with the original strings sample found at the beginning. Once again, the piece builds up the central motif with brass and the Hammond organ and then—almost like a small bow of respect to the great model—leaves it to the orchestra, with the finale to the symphony's first movement, to conclude the *The Fifth*, too.

*

Within the almost unexplored popular Beethoven reception of the 20th and 21st century, two remarkable observations can be made: firstly, most of the social, cultural and political topoi of his time that are associated with Beethoven's music in popular formats are confirmed—notions of genius, violence and overpowering, of nationalities and the religion of art, of the need for entertainment and the cult of the expert. Secondly, the love of Beethoven's music in pop, rock, metal and hip hop is much stronger, and the degree of distance from Beethoven as a cultural icon much less, than perhaps is assumed. Contrary to the distance that has grown between classic and popular formats of

music over two centuries, the love of Beethoven's music is thus a remarkable connection between worlds that are barely still linked otherwise.

Adnotations

[1] https://www.masterworksfineart.com/artists/andy-warhol/beethoven-series-1987. https://guyhepner.com/artist/andy-warhol-art-prints-paintings/beethoven-by-andy-warhol/.

[2] The article written by Peter Wicke on "Popmusik" in the *Beethoven-Lexikon* is also limited to a brief and in parts inaccurate overview; see *Das Beethoven-Lexikon*, ed. by Heinz von Loesch and Claus Raab, Laaber 2008, pp. 586–588.

[3] The exhibition set for early summer 2020 for the rock 'n' pop Museum Gronau titled *Ludwig lives! Beethoven's traces in the popular arts* will attempt to fill this research gap, at least in outline, with sections on pop literature, jazz, the fine arts, rock and pop as well as film and advertising.

[4] Albrecht Riethmüller, *Nach wie vor Wunschbild: Beethoven als Chauvinist*, in: *Der "männliche" und der "weibliche" Beethoven*, ed. by Cornelia Bartsch, Beatrix Borchard and Rainer Cadenbach, Bonn 2003, pp. 97–117.

[5] Wolf Hoffmann in an interview with the author in Hamburg on August 23, 2019.

[6] See the chapter on Metallica, in: Michael Custodis, *Klassische Musik heute. Eine Spurensuche in der Rockmusik*, Bielefeld 2008.

[7] See among others Manfred Schuler, *Rockmusik und Kunstmusik der Vergangenheit. Ein analytischer Versuch*, in: *Archiv für Musikwissenschaft* 35 (1978), pp. 135–150; Edward Macan, *Rocking the Classics. English Progressive Rock and the Counterculture*, New York and Oxford 1997; Horst Herold, *Symphonic Jazz – Blues – Rock. Zum Problem der Synthese von Kunst und Unterhaltungsmusik in symphonischen Werken des 20. Jahrhunderts*, Münster et al. 1999; Bernward Halbscheffel, *Rock barock. Rockmusik und klassisch-romantische Bildungstradition*, Berlin 2001; the special issue "Crossover" of the magazine *Positionen* 71 (2007), May; the chapter titled "Orchester" in: Bernward Halbscheffel, *Progressive Rock. Die Ernste Musik der Popmusik,* Leipzig 2012, the anthology *Reflexionen zum Progressive Rock,* ed. by Martin Lücke and Klaus Näumann, Munich 2016, Michael Custodis, *Living history: The Guitar Virtuoso and Composer*

Steve Vai, in: *Heavy Metal, Gender and Sexuality*, ed. by Florian Heesch and Niall Scott, London and New York 2016, pp. 55–70 as well as the special issue *Popularisierung "klassischer" Musik* of the magazine *Musiktheorie* 33 (2018), issue 4.

Beethoven –
his vocal compositions
from the perspective of
vocal science and singers' medicine

Chapter 13

Vocal chamber music and Ludwig van Beethoven's listening and language skills – musicological and music-medical aspects

Thomas Seedorf / Dirk Mürbe

Beethoven's vocal chamber music

The powerful impact of Beethoven's piano sonatas, string quartets or, above all, symphonies has been overwhelming, up to the present day. This sometimes threatens to overshadow the fact that the composer was repeatedly occupied during his lifetime with music for the human voice—intensively so, too. The monumental Missa solemnis was even the high point in his creative output for him, the epitome of what he wished to express and convey as an artist.

The counterpart to vocal works scored for a large orchestra such as the two masses, the oratorio *Christ on the Mount of Olives* or the Goethe setting *Silence of the Sea and Happy Voyage* is an extensive group of works for one voice or for several voices with or without the piano or with a small ensemble. This group of works covers vocal compositions of the most varied kind: poetry set to music for one voice and piano, which Beethoven sometimes called a 'Lied' and sometimes a 'Gesang' (in English, 'song' in both cases); sometimes, however, he published them using just the neutral descriptor 'with accompaniment by the pianoforte'; moreover, duets and other ensembles, and additionally a large number of highly elaborate arrangements of folksongs for singing voice and piano trio, and not least of all, a plethora of canons, which Beethoven wrote for the most diverse occasions. If one looks for an overarching term that does justice to the heterogeneity of this group of works, the formulation

'vocal chamber music' presents itself.[1] It points to a type of scoring, in the same way as instrumental chamber music, i.e. to works with just a small number of participants, yet at the same time to the institutional venue of these compositions, the majority of which were originally intended for music-making within the intimacy of a domestic setting.

The composing of songs as a life-long project

Beethoven composed his first song aged twelve, while his final canon he noted down just a few months before his death. Thus, the writing of vocal music occupied him throughout his entire creative life. Beethoven experienced his breakthrough as a musician as a pianist, however, who mastered the art of improvisation, in particular, like almost no other. As a composer, Beethoven initially came to the fore with instrumental compositions, above all: sonatas for the piano, violin and cello, piano and string trios, string quartets or compositions for larger ensembles such as the septet for winds and strings. After 1800, Beethoven began to turn almost systematically to all the genres common in his day, including those with singing: the oratorio (*Christ on the Mount of Olives*), opera (*Leonore* respectively *Fidelio*), spiritual music (Mass in C Major) and vocal chamber music. Beethoven was pursuing several goals with the early song publications, which came out under one opus number: he wanted to demonstrate his versatility as a composer, on the one hand, and it was important for him to show that he was also capable of writing catchy, easily graspable music, on the other; and finally, it was also a question for him of spreading his music as widely as possible and of earning money with the offspring of his creative muse, so to say.

The fundamental experiences that Beethoven gathered while composing vocal music translated into other genres, too. 'Cantabile' (singable) is one of the performance instructions particularly used by him, and in fact the model of singing can be recognized in many of his instrumental movements. Beethoven

recommended his piano students to write texts under the notes and to make the piano speak and sing when playing, as it were. In several experimental works, Beethoven blurred the boundaries between vocal and instrumental music. In the so-called Choral Fantasy Op. 80, he combines a piano concerto with a cantata, while in the Ninth Symphony he extends the finale into a kind of oratorio. In both cases, songs play a central role. For the vocal part of the Choral Fantasy, Beethoven falls back on his song *Mutual Love*; for the finale of the Ninth, with the melody to Schiller's *Ode to Joy*, he invents a song of striking simplicity and catchiness, which becomes the starting point for a highly elaborate series of variations.

Timeline of the creation of songs and deafness

The composition of vocal music in all the stages of Beethoven's life can also be viewed from the perspective of how his deafness developed over time, as the composing of songs is often linked with special skills in terms of listening and language. In a letter to his schoolfriend Franz Gerhard Wegeler that we can date to June 29, 1801, Beethoven reports on the symptoms and the duration of the hearing impairment as he perceives it:

> "only, the envious demon, my poor health, has thrown a rotten spoke in my wheels, namely: for three years, my hearing has been getting weaker […]. […] my ears, which continually whoosh and roar night and day; I spend my life telling people I am deaf […]. […] the high notes of instruments singing voices, when I am somewhat further away, I don't hear them […]. […] sometimes I hardly the person talking quietly, the tones perhaps, yes, but not the words, and yet as soon as someone shouts, I can't bear it […]."[2]

Even if the cause of Beethoven's hearing impairment can no longer be proven beyond doubt today, the course of time and the symptoms named in the letter (deafness, noises in the ears, particular limitations in the higher notes, damaged understanding of language sensitivity toward noise) argue for a progressive onset of deafness in the inner ear (cf. chap. 9). In the Heiligen-

stadt Testament written in 1802, too, reference is made to the course of time and the social damage and isolation caused by the hearing impairment is emphasized (cf. chap. 4):

> "Oh you men who think or say that I am malevolent, stubborn, or misanthropic, how greatly do you wrong me, you do not know the secret cause which makes me seem that way to you, from childhood on, my heart and soul have been full of the tender feeling of goodwill, I was even inclined to accomplish great things, but think that for six years now I have been hopelessly afflicted […]."[3]

Assuming that this timeline described by Beethoven was preceded by an initial phase with minor restrictions in terms of his hearing ability that slightly impaired the composer, we can expect that Beethoven was confronted by progressive deafness from his third decades onwards. There are no indications in any sources of deafness during the musician's childhood.

The continued deterioration in his hearing as described in these two documents until complete deafness sets in can also be retraced by means of later sources, such as one of his last public appearances as a pianist in 1814, for example. From 1818, Beethoven carried out conversations exclusively in written form, of which numerous conversation notebooks kept by him bear witness. For the last years of his life, Beethoven most likely lived in a state of complete deafness. Thus, a report of May 7, 1824 describes how Beethoven, turned away from the public as the conductor, did not notice the frenetic applause following the Kyrie in his Great Mass, and how he was gently grasped by the shoulder and turned around so that he might receive the ovations.[4]

If we bring the depicted course of Beethoven's deafness together with the times at which various works of vocal chamber music were created, there are no indications that the hearing impairment resulted in the composer turning away from the writing of songs. On the contrary, works of a very intense musical-poetic quality, e.g. the *Three Goethe Songs* Op. 83, set to music in 1809/10, the song cycle *To the Distant Beloved* Op. 98 from 1816, or the song *The Kiss* Op. 128, first drafted in 1798 but not completed until 1822, are proof of the compo-

sitional mastery for the human voice (and for the piano!) in the creative phase where control over his hearing has been lost.

Development of listening and language skills in early childhood

The development in Ludwig van Beethoven's communication skills in early childhood were, however, not yet restricted by the impairment of his sense of hearing. To further understand his brilliant compositional output, in the area of vocal chamber music, too, it is worthwhile linking up musicological-historical findings with a modern-day neuro-scientific approach. The latter proves that musical encouragement can without doubt be evaluated as an early factor influencing language skills. Language and music represent fundamental socio-cognitive domains of the human being and show the activation of similar neuronal networks in their processing, despite differing hemispheric dominance.[5] Language and music are linked to one another to a special degree through melodic information. Thus, for example, the development of vocabulary and grammar in the acquisition of language is significantly formed by the prosody, the linguistic melodic input.

There is evidence of comprehensive and early musical encouragement in Ludwig van Beethoven's childhood. The basic parameters for this were crucially created by Beethoven's father and grandfather, who worked as a singer / music teacher and court music director respectively. This encouragement and the boy's talent helped build up a highly developed cortical representation of music as the foundation for the unique musical creativity later on. The cortical representation of music as an almost inexhaustible "music library" that was laid down early on in Beethoven's head initially served as the key precondition for a successful career as a musician, and then later on, in the stage of advanced deafness, too, as the basis for the skills as a composer. For vocal music compositions, it appears that in particular a high degree of language skill is required, and Beet-

hoven's early musical training prepared him for these tasks in a special way. Neuro-scientific investigations today prove without doubt that the promotion of music has also advantageous effects in terms of language development.[6]

In Beethoven's parents' house, it was music that was made above all, while the reading of books clearly played no role, to begin with. It was only through his Bonn teacher Christian Gottlob Neefe that the young Beethoven was given access to fine literature and became familiar with the poetry of the Göttinger Hainbund (the "Grove League of Göttingen") and of Klopstock; he was already familiar with the works of Goethe and Schiller, too, in Bonn.

Beethoven maintained interest in the literature of his time throughout his life. He possessed his own library, but the home libraries of aristocratic friends were also available to him. He made use of public lending libraries and studied daily newspapers, music magazines and the almanacs that were highly popular in his day. In short: Beethoven was a passionate reader. The more his deafness progressed, the more important reading became for him. Literature acquired an almost "existential and also therapeutic meaning" for him."[7] Many of the names are known today to literature cognoscenti at best. Such writers as Samuel Friedrich Sauter, Christian Ludwig Reissig or Christoph Friedrich Tiedge were known in literary circles in the 19th century, but were then slipped into oblivion all the more profoundly. On the other hand, 18th century authors like Ludwig Hölty or Johann Wilhelm Ludwig Gleim remained remembered for some of their poetry at least, in which composers such as Beethoven or Franz Schubert have played an important role.

It is evidence of Beethoven's feeling for the literary currents of his time that he engaged with no poet more intensely than he did with Johann Wolfgang von Goethe. Besides the incidental music to the latter's drama *Egmont*, Beethoven set to music several of Goethe's poem, including such well-known ones as "Do you know the land where the lemon-trees bloom?" or the "Song of the Flea" from *Faust*. *New Life, New Love* exists in two different versions, while "Only he who knows yearning" was set to music four times by Beethoven, in the most varied ways.

In addition, attempts were made to compose versions of such poems as the *Erl-King* or the *Rose on the Heath*, which did not make it beyond the draft stage, however.

A large share of the poems composed by Beethoven concern love in all its abundant facets. The "song cycle" *To the Distant Beloved* carries the subject of inner longing within the title; *When the Beloved Wanted to Part* is a song directly countering the loss of one's loved one; *Bliss of Melancholy* implores "tears of unhappy love" not to dry up at all, so as to keep the memory of the beloved alive. Poetry about nature can also be found in Beethoven's songs, such as the *Song of May* or in *The Quail's Call*, in which a sound from nature, the call of the quail named in the title, seems to call messages to the lyrical I-form such as – "Fürchte Gott! ("Fear God!") or "Bitte Gott! ("Ask God!") –. The religious tone that is hinted at here can be heard more strongly in other songs, most clearly of all in the six songs based on poems by Christian Fürchtegott Gellert Op. 48, but also in the *Evening Song under the Starry Sky*, the title of which refers not by chance to the philosophy of Immanuel Kant, which Beethoven highly esteemed. Tiedge's poem *To Hope* is also philosophical in tone. But a typical characteristic of Beethoven is that he composed songs that were connected to a particular time or occasion, too. The *Farewell Song to Vienna's Citizens* and the *Austrians' War Song* were created in 1796, when Austria entered the war against the French revolutionary troops. The Italian song *In questa tomba oscura*, in contrast, is an occasional work, which Beethoven composed for a compilation publication, as he often did with smaller works of the most varied genres.

Beethoven's compositional treatment of poetry

In Beethoven's time, the expression 'Lied' (song) meant both a specific form of lyrical poetry and a genre of music. Goethe put into verse the connection between the two forms in his Lied-poem *To Lina*:

"Should these songs, love, as they fleet,
Chance again to reach thy hand,
At the piano take thy seat,
Where thy friend was wont to stand!

Sweep with finger bold the string,
Then the book one moment see:
But read not! do nought but sing!
And each page thine own will be!

Ah, what grief the song imparts
With its letters, black on white,
That, when breath'd by thee, our hearts
Now can break and now delight!"[8]

Typical Lied-poems always carry music within them, Goethe suggests—the verses practically demand to be made to sound by being linked up with notes. All the verses are equal or least constructed in a very similar way, and can be sung to a single melody, as is familiar from the folksong model.

Beethoven composed many songs in this form. Some of them comprise only one page of sheet music, but have many verses which are always sung to the same music, albeit "according to the different expression in the verses piano and forte," as it expressly says in the performance instruction for *The Man of his Word* Op. 99, a song with six verses. Besides the simple stanzaic song, Beethoven also frequently used a form derived from this, in which the stanzas are varied, either in the melody, in the accompaniment or on both levels, as in most of the pieces found in the song cycle *To the Distant Beloved*.

But Beethoven would not have been Beethoven, if he had not repeatedly sought unconventional solutions in the area of vocal chamber music, too. For example, in several pieces he comes close to the great aria, as is familiar to us from opera, in the afore-mentioned Goethe setting *New Life, New Love*, for instance, or in *Adelaide*, described as a "cantata" in contemporary sources. The principle of through-composition, as often tried out in parallel to Beethoven by his contemporary Schubert, who was a whole generation younger, was something Beethoven by and large avoided. Yet when he used it, such as in *The Quail's*

Call or the second setting of Tiedge's *To Hope* Op. 94, he succeeded in creating works of extraordinary quality.

The transition from the read to the sung song, which Goethe's poem *To Lina* invokes, is largely on account of the verse form of the poem. Meters establish a rhythmic structure that the composer cannot readily ignore. Reissig's poem *The Contented One*, for example, consists of a regular sequence of seven- and six-syllabic, iambic verses: "Zwar schuf das Glück hienieden / Mich weder reich noch groß" ("While my fortune down here made me / Neither rich nor great") are the opening verses, of which the anacrustic form and main stresses – "nie" ("never") and "groß" ("great") – are precisely translated into music by Beethoven in his song Op. 75 No. 6.

Beethoven proceeded in a highly similar way with the poem *Delicate Love* by the verse-writing theologian Karl Friederich Wilhelm Herrosee: "Ich liebe dich, so wie du mich, / Am Abend und am Morgen." ("I love you, as you do me, / In the evening and the morning.") Beethoven takes up the basic iambic rhythm of the poetry and translates the stressed and unstressed syllables of the verses into notes of varying pitch and length. The effect of this music is by no means as impersonal as this description suggests, however. On the contrary: the melody is highly singable with a drive that lasts from the first to the last bar.

The counterpart to this merry piece is the very serious Gellert song *Of Death*: "Meine Lebenszeit verstreicht, / Stündlich eil' ich zu dem Grabe." ("My time alive expires, / Every hour I rush to the grave.") The trochaic meter can be transferred into a musical meter in different ways: in duple time, in which the unstressed syllables fall on the heavy beat, or in triple time, in which the first note is twice as long as the second. Beethoven decides on the second solution. In the piano accompaniment he maintains the alternating half and quarter notes throughout—a symbol sounding the relentlessness with which man marches toward death. This basic rhythm dominates in the singing voice, too; only occasionally does Beethoven diverge from this, in order to illustrate the sending-away or to lend weight to words. Instead of melodic momentum, as characterizes *I Love You*, declamatory heaviness holds sway in this song, which according

to Beethoven is to be performed as "moderate and rather slow than fast."

Beethoven's compositional treatment of lyric poetry reveals an extraordinarily high degree of sensitivity to language, which was also shaped by the previously shown musical influences of early childhood. Modern-day electrophysiological measurements prove, concerning the processes of auditory processing beginning in the mother's womb, that babies can already distinguish the rhythmic patterns of their mother tongue from rhythmically deviating speech stimuli in the first months of life on the basis of the emphases.[9] A highly developed prosodic sensitivity is thus not only a guarantee of a masterly treatment of lyrical meter and musical shape, but also the enabler for multi-lingual song compositions, which also applies to Beethoven's song oeuvre. Beethoven wrote most of his contributions to vocal chamber music based on German texts. Some of these works were already widespread in translated form, too, however. *Adelaide*, for example, was known throughout all Europe in the 19th century in an Italian version. Not least of all due to his training in composition under Antonio Salieri, Beethoven was familiar with the characteristics of composing Italian texts. And as the cultural community in Vienna was strongly influenced by Italian, it is not surprising that Beethoven also composed several contributions to vocal chamber music in the Italian language. A canzonetta on an English text can also be found in this group of works, *La Tiranna*. However, Beethoven does not appear to have mastered English with certainty, for he corresponded with his English publisher Thomson in French, which at the time carried the importance for international communication that is now accorded to English.

One text—several possible settings to music

The setting to music of a poem is always a question of interpretation of the poetic text, too. It is up to the composer as to which words he emphasizes or to what extent the piano part

only underlines the context of the text that is sung, or adds a further level of meaning to it. A comparison of several settings of the same poem clearly shows just how wide the spectrum of musical readings of a text is. Goethe's "Only he who knows longing," for example, has inspired numerous composers. Franz Schubert set the poem to music no less than six times, four times for solo voice, once as a duet, in accordance with the model in Goethe's novel *Wilhelm Meister's Journeyman Years*, in which the poem appears as a duo between Mignon and the harp player, and finally as a quintet for male voices a cappella. Beethoven, too, set "Only he who knows longing" to music several times, yet unlike Schubert, he published all the version together in one print, thereby demonstrating that a complex poem such as that of Goethe cannot be captured in one single song at all. The songs are connected with one another via many references —recurring keys and time signatures, striking chords, melodic formulas—together acting like a composed prism that allows different aspects of the poem to emerge.

While the four Mignon songs were created around the same time, more than ten years lie between the two versions of *To Hope*. When Beethoven set Tiedge's poem to music around the turn of the years 1804/05, he decided on a setting as a strophic song of great melodic beauty and with emphatic repetition of the second half of each of the poem's verses. It remains open as to whether the sorrow sung of in the first verse, "which tortures a delicate soul," originates from a kind of existential pain of the kind Beethoven was familiar with, or from an unhappy experience of love. Anyway, Countess Josephine Deym, for whom the song was created, belonged to the close circle of those women around Beethoven to whom his famous letter to the "immortal Beloved" could have been directed. In 1816, under quite different conditions, Beethoven approached Tiedge's poem a second time. His deafness was now far advanced and he had largely retreated from the public. This time he set the text as a through-composed song, in which he subtly reacts to the metrical irregularities and contrasting moods of the poem. Moreover, he placed several verses at the beginning that Tiedge had added to a later edition of his poem. Beethoven composed it like an

operatic-style accompagnato recitative, which begins gloomily and wanders through various keys, until the veil is torn away and the main message of the song emerges, "Man must hope! He does not ask!" While the first version of *To Hope* can still be understood as a love song, the second setting is rather a philosophical reflection in notes.

Composing and making music as the deafness increases

Beethoven's unique talent, the exceptional cortical representation of language and music developed during childhood and youth, his lifelong experience of music, and not least of all the structure of his personality did not rob the deaf musician Beethoven of his means of realizing creative compositional visions. The creation of a composition is primarily a cognitive process that draws on knowledge and applied cortical representations and does not require feedback through perceptual input. Correspondingly, one would not have expected any drying-up or a complete discontinuation of the compositional activity in the course of the increasing deafness. Beethoven's compositions build upon syntactical rules that are acquired and can be applied without auditory input. In this, the idea of the "inner voice" and "implicit prosody" can be applied to the reading of music, too, and the inner hearing of the imagined sounds and anticipation of the music lead to the self-perception of the composition.[10] However, the hearing impairment at an advanced stage may have impeded receptive and productive control, which, though not absolutely necessary, is often helpful for precision work in the composition. What's more, we can hardly assess the extent to which Beethoven's compositional ideas were influenced by the psycho-social distress and isolation arising from the destruction of phonetic communication. This could have led both to greater intentions of artistic revelation, as well as resigned, fierce coloring of some compositions.

While the compositional abilities could be developed, even

without perceptual feedback, through the use of cognitive processes and music-related cortical representation, Beethoven's own active music-making faced serious problems as his hearing deteriorated, which he describes in the above-cited letter to his friend Franz Gerhard Wegeler, among other sources. Besides the restrictions caused by the loss of hearing and the sound distortions, he also laments the impaired attenuation of loud acoustic stimuli presumably due to damaged cells in the auditory system, which, as heightened sensitivity to sound, hampered active music-making. That Beethoven still performed in public up until 1814, despite heavily impaired hearing, is also to do with the efficiency of the neuromuscular regulatory circuit, often disregarded in comparison with the auditory control. Besides hearing, the neuromuscular or proprioceptive control is the second relevant circuit with which the production of musical sequences is controlled while an instrument is being played or singing occurs. For example, neuromuscular memory enables a phrase that is to be sung or played on an instrument to be mastered, without "looking for the first note" and without auditory or visual information. This regulatory circuit is based on signals from receptors in the area of the musculature and the joints, which unconsciously inform the brain stem of the activity status of the musculature to be used for active music-making and which allow a production of sound independent of hearing. With the help of this neuromuscular control, Beethoven was able to retrieve the motoric patterns imprinted and built up since early childhood and the cortical representations connected with them. However, Beethoven will have been seriously affected by the restrictions in verbal communication with other performing musicians and the absence of direct musical reflection with the audience, which dried up his sources of social interaction.

Vocal challenges in the compositions of Ludwig van Beethoven

Beethoven's treatment of the human voice is the subject of frequent discussion. Whether in the soprano part of the Missa Solemnis, in the Finale of the Ninth Symphony, in the opera *Fidelio* or in the songs—from a singer's perspective, great demands are placed on the voice when performing Beethoven's vocal music (cf. chap. 14; chap. 15). Occasionally these special challenges are connected with the viewpoint that Beethoven overstepped the boundaries of what is vocally manageable, and that this was to do with his deafness and the lack of auditory control.

This position is opposed by the biographical and substantive arguments already laid out. Beethoven turned to vocal chamber music from his youth until old age. The early start to musical training in Beethoven's family setting, which is marked by singing, is proven, while there is no indication of hearing impairment during his childhood. Given his sensitivity to speech, speech rhythm and musical accentuation are in harmony in his compositions.

Also, outstanding performers of the songs of Ludwig van Beethoven, such as the tenor Peter Schreier (1935–2019) and the baritone Olaf Bär (born 1957), do not argue in favor of the high demands made in these compositions being linked to a lack of understanding for the human voice as an instrument, nor to a lack of auditory control on the part of the creator. One reason for the particular challenges in terms of voice technique lies rather with the often very "instrumental" control of the voice. Thus, unlike with string instruments, the crescendos with a subsequent *subito piano* frequently indicated by Beethoven for the voice are demanding in terms of technique, as, for example, in the final part of the song *New Love, New Life* Op. 75. Portamenti and long phrases of notes detached from one another, such as in the song "Light Clouds Sailing on High" from the song cycle *To the Distant Beloved* Op. 98 can only be mastered with outstanding vocal technique. Particularly challenging for singers are the demands for a new quality of expressiveness in

numerous songs of Beethoven. The six songs on poems by Christian Fürchtegott Gellert Op. 48 are impressive evidence of the breadth of vocal excellence in the service of higher expressiveness, which range from subtly increased intensity in phrases of the same pitch such as in the congenial *Pleading* right up to oratorical voice leading in *The Glory of God in Nature*. The vocal technique must deal with the high declamatory demands associated with many of Beethoven's songs as a matter of course and without external effort.

The opening-up of new sound worlds which Beethoven achieved in symphonic and instrumental chamber music holds true for his compositions in vocal music, too. A musical urge for expression that sought out new forms led not only to the innovation in symphonic music whereby the sound of the orchestra is extended by the employment of choral and solo voices. It also opened up new paths in the compositions of vocal chamber music, for example, combining for the first time different songs into a self-contained song cycle. The musical shaping of revolutionary political ideals and the realization of the high demands in terms of literary content made on the underlying texts required an extensive exploration—and expansion, too—of the options in terms of vocal technique. The great challenges that Beethoven set for singers arise first and foremost from the compositions, which are linked by expressiveness and truthfulness, and are not due to a limited knowledge of the vocal apparatus, nor due to his increasing deafness. The musical quotation "Accept, then, these songs" (from the song cycle *To the Distant Beloved*) may always point us to the treasures of Beethoven's vocal chamber music, in appreciation of a brilliant composer of songs, one who goes as far as the boundaries of singing, yet for sure understands the limits of the human voice.

This contribution is dedicated to the memory of the singer and conductor KS Prof. Peter Schreier (1935–2019). He was one of the most well-known interpreters of the German Lied in the 20th century, who time and again engaged with Beethoven's vocal chamber music, whether in the concert hall or the recording studio. While this contribution was being prepared, and just a

few weeks before his death, he expressed his view of the peculiarities and vocal challenges in the song oeuvre of this composer, in conversations held with Dirk Mürbe.

Adnotations

[1] Cf. Thomas Seedorf: Vokale Kammermusik, in: Beethoven-Handbuch, ed. by Sven Hiemke, Kassel et al. 2009, 548–566.
[2] Ludwig van Beethoven: Briefwechsel. Gesamtausgabe. Vol. 1: 1783 – 1807, ed. by Sieghard Brandenburg, Munich 1996, p. 79 sq.
[3] Ibid., p. 121.
[4] Alexander Wheelock Thayer: Ludwig van Beethovens Leben. Auf Grund der hinterlassenen Vorarbeiten und Materialien weitergeführt von Hermann Deiters, vol. 5, ed. by Hugo Riemann, Leipzig 1908, p. 92 sq.
[5] Isabelle Peretz, et al. Neural overlap in processing music and speech. Philosophical Transactions of the Royal Society B, 2015, vol. 370.
[6] Sebastian Jentschke and Stefan Koelsch: Musical training modulates the development of syntax processing in children. Neuroimage. 2009; 47:735–44.
[7] Knud Breyer: Beethovens Verhältnis zur Literatur, in: Beethovens Welt, ed. by Siegbert Rampe, Lilienthal 2019 (Das Beethoven-Handbuch 5), 219–226, here 225.
[8] https://www.gutenberg.org/cache/epub/1287/pg1287.html.
[9] Angela D. Friederici, Manuela Friedrich and A. Christophe. Brain responses in 4-month-old infants are already language specific. Curr Biol. 2007; 17:1208–11.
[10] Mara Breen. Empirical Investigations of the Role of Implicit Prosody in Sentence Processing. Language and Linguistics Compass 8/2 (2014): 37–50.

Chapter 14

Beethoven: The Transition from Lyrical to Dramatic Singing

Matthias Echternach

In addition to high praise of his compositions and methods of orchestration, anyone who studies Beethoven at length will also repeatedly encounter critical remarks about his handling of singing voices.

This criticism had already begun during Beethoven's lifetime. The bass Friedrich Sebastian Mayer (1773–1835) sang Don Pizzaro at the premiere of the opera *Leonore* in 1805. He had been married to Josepha Hofer, the first Queen of the Night and sister of Mozart's wife Constanze, since 1797. Mayer apparently had trouble singing a passage at the end of Act II on the first try and, according to Beethoven's biographer Anton Schindler, is said to have angrily shouted: "My brother-in-law would never have written such damned nonsense!"[1] There are similar reports about the premiere of the Ninth Symphony in 1824. The solo singers raised objections, mainly to passages that were too high, and the tenor and bass had to be replaced.[2] Schindler reports that the two female soloists, Caroline Unger (1803–1877) and Henriette Sontag (1806–1854), tried in vain to convince Beethoven to change the tessitura. Unger called Beethoven a "tyrant over all the sensory organs," and Sontag finally sighed in resignation, "Well, then we must go on torturing ourselves in the name of God."[3]

Beethoven is often said to have understood much less about how to handle the singing voice than how to handle instruments. He himself is alleged to have told his friend Georg August von Griesinger (1769–1845) in 1822: "Although I am fully convinced of the value of my *Fidelio*, I am also clearly aware the symphony is my true element. When it sounds inside me, I always hear the full orchestra; I can expect anything from instru-

mentalists, but when I compose songs I must always ask myself: can this be sung?"[4]

While Beethoven certainly still intends quite a lyrical singing style in his Lieder (cf. chap. 13), this has already become much more dramatic in his sacred works such as the Mass in C major and especially in the Missa solemnis (cf. chap. 15). The opera *Fidelio* then occupies a unique position in the history of opera due to Beethoven's treatment of singing voices. The first and second versions—with the title *Leonore*—premiered in 1805 and 1806, while the most frequently played version premiered in 1814. Beethoven's *Fidelio* was produced in a time of upheaval. Politically, its roots in the ideals of the French Revolution can hardly be overlooked. In particular, this opera represents the composer's clear affirmation of love, humanity, freedom and the rejection of dictatorship.

In this opera, Beethoven gave many singers new tasks they had never quite been faced with before. The singer Anna Milder-Hauptmann (1785–1838), who sang Leonore in the premieres of all three versions, must have had an unusually sonorous and strong voice. Carl Friedrich Zelter (1758–1832) is supposed to have said of her: "That woman's voice comes out of her throat as thick as your arm."[5] There is a direct line from this dramatic handling of voices to the works of Richard Wagner (1813–1883). The dramatic vocal artistry of singer Wilhelmine Schröder-Devrient (1804–1860), who performed the role of Leonore from 1822 onwards with enthusiastic approval from Beethoven himself, was a major influence on him. Wagner, who describes in his autobiography how he first heard Schröder-Devrient as Leonore,[6] writes of her that she was the one who "suddenly gave to my artistic sensibility a new direction that was decisive for my entire life."[7] He composed the leading female roles in *Rienzi*, *The Flying Dutchman*, and *Tannhäuser* for her.

In the creative period during which *Fidelio* assumed its final form—which began with his Third Symphony, the "Eroica," and ended with the Eighth Symphony—Beethoven increased the density of orchestration in a way that would have been unthinkable only a few years previously. This has consequences

not only for conductors and listeners, but also for singers, who had to rise to the larger sound of the orchestra. *Fidelio* cannot be approached with a lighter singing style of the kind that was still possible with Mozart. Florestan's cries of "Zur Freiheit ins himmlische Reich" would be unlikely to sound convincing with the vocal aesthetics of a Tamino, Belmonte or Don Ottavio. There is a reason why singers who have also mastered the dramatic repertoire are preferred for the main parts in this opera today.

Beethoven's music, and his vocal music in particular, therefore stands at the threshold of an epoch that was revolutionary in both political and musical terms, an epoch of the shift from lyric to dramatic. However, those terms were not yet in common use to describe vocal performance at the time. In the context of an epochal transformation of operatic singing in the 19th century, it was only in the 1830s that a fundamental distinction was made between different types of voices: light, lyric voices that carried on the older tradition, and heavy, dramatic voices that met the new demand for a more intense, powerful sound.[8] The conductor and musicologist Rudolf Kloiber (1899–1973) only developed a system of German voice classification (the Fach system) in the mid-20th century. He made a fundamental distinction between the "lyric type" and the "heroic type" (= dramatic type), as well as the "in-between type" ("Zwischenfach").[9]

However, these two poles were already forming during Beethoven's time, causing changes to singing technique.

If we ask what sets dramatic roles apart from lyric roles, it seems to be the louder volume of dramatic roles that is paramount. Not only do singers often describe it that way, it has also been found to be so in scientific investigations. In some studies, where professional singers were asked to sing a scale in a style they subjectively regarded as lyric and a second scale in a style they regarded as dramatic, all 12 professional singers sang at a significantly louder volume expressed by the sound pressure level for the dramatic style.[10]

This raises the question of whether increased sound pressure level should be seen as a risk for vocal fatigue or injury. A con-

nection of this kind has often been attributed to dramatic singing in general, but also to Beethoven's operatic roles in particular and that of Florestan most especially.

How can the sound pressure level of the voice be increased?

A worthwhile approach to this question requires a a brief sketch of the principles of human vocalization, or "phonation," according to current scientific knowledge.

The human voice, in the first approximation, is primarily a sound created by the compression and decompression of air molecules, where the resulting waves spread out at a speed of approximately 334 meters per second. To generate this sound, three main components of the vocal instrument are needed; their basic features are described below: (1) breathing, (2) the vibration of the vocal folds in the larynx, and (3) sound modification in the vocal tract.

Airflow

Sound waves are mainly triggered by pulses of air, which come about when the flow of air from the lungs to the mouth is periodically interrupted by the vibrating vocal folds in the larynx.

To create air flow, a force, in this case the force of exhalation, must be exerted on the lungs. The vocal folds can be open or closed during exhalation. Since the space between the vocal folds is known as the glottis in technical terminology, we speak of an open or closed glottis.

If the vocal folds are closed during exhalation, there is a pressure acting below the vocal folds, known as subglottic pressure. Also important in glottis closure is the force with which the arytenoid cartilage in the larynx, and thus the vocal folds, are gradually brought closer together. When the vocal folds open, the airflow follows the pressure gradient of higher pressure below and lower pressure above the vocal folds.

The pressure gradient, the airflow, and the degree of resistance can be physically transformed into an equation to which Ohm's law applies. The more aggressively the air molecules can be compressed, the higher the amplitude of the sound and the louder the sound. This aggressiveness is particularly high when the airflow is very high, which can be achieved mainly by increasing the pressure gradient or by decreasing the resistance. Sound pressure level is therefore often produced by increased pressure below the vocal folds.

Vocal fold oscillations

The mechanics of vocal fold oscillation are not yet understood in perfect detail. It seems relatively clear that raising the pressure below the vocal folds causes the soft tissue structures of the vocal folds to burst open and the glottis opens, making airflow possible. However, why the vocal folds close again is not completely understood. One contributing factor must be the power of so-called myeloelastics: every biological tissue seeks to return to its starting position after being displaced. In addition, there are also aerodynamic components, i. e. the pressure within the glottis changes, creating a self-sustaining oscillating system that would oscillate infinitely if there were no damping. These pressure changes in the glottis are probably mainly caused by changes in vocal fold configuration during vocal fold oscillation, so-called divergent or convergent vocal fold configuration. There is also turbulence of the molecules within the glottis, which can cause a decrease in pressure. For a long time it was assumed that Bernoulli's principle, which states that a decrease in pressure occurs practically perpendicular to an airflow, would be of decisive importance here.[11] As clear as it may seem that this principle also applies here, it is equally improbable that it fully explains the oscillations according to current science. When pressure is raised in order to raise sound pressure level, it leads to a faster aggressive closing motion and a more aggressive impact on the vocal folds. This leads to stress from impact and friction. It should be assumed that this can contribute to

fatigue. In spite of the fact that singers should try to use this form of sound pressure level generation as little as possible, dramatic voices certainly have to use this source as well. However, in addition to higher pressure, there are two other factors that can create sound pressure level. One is lowering glottal resistance and therefore raising the airflow. The side effect of this technique, however, is that the overtone spectrum of the voice can change. The pulse of air that forms at the glottis creates more than one sound wave. It is actually a multitude of waves: overtones with integral numerical relationships, meaning that with a fundamental frequency of 110 Hz, for example, overtones can be detected at 220, 330, 440 Hz etc. The higher the pulse of air is, the higher the sound pressure level of the fundamental frequency. This also changes the intensity in the overtone spectrum and therefore the characteristics of the sound.

Vocal tract

Resonances also affect sound pressure level. The sound that comes out of the glottis is formed in the air-containing spaces above the glottis, i.e. the upper larynx, pharynx, mouth, and parts of the nose. These spaces are known as the vocal tract. In the vocal tract, some overtones in the sound pressure level are amplified and others are filtered out.

The resonances are of decisive importance for more than just intelligibility of vowels. The formation of resonant space, especially by the tongue, can amplify frequencies by 3000 Hz, which gives listeners the impression that the voice is louder. In the aforementioned study by our working group, a second mechanism was found, namely that some singers try to create a more dramatic sound by darkening their tone. This can be done by creating a longer resonance space, for example, which is achieved by lowering the larynx. This lowering also leads to amplification of the frequencies by 3000 Hz and thus to an increased perception of sound pressure level. These phenomena can be observed today with some dramatic singers, as well as Jonas Kaufmann, for example.

It appears that singers in the dramatic Fach must use all three strategies of sound pressure level control mentioned here to master the parts. The singers who manage this are very scarce in the Wagner repertoire; for example, in the case of Tristan, they comprise only a handful of excellent singers. But let us return to Beethoven.

Why is *Fidelio* so hard for singers, from the perspective of vocal physiology? The orchestration is distinctly denser and more emotionally intense than in most Mozart operas. The performance spaces that were available to Beethoven for the premiere were also larger than those used by Mozart. For example, the Freihaustheater, where *The Magic Flute* premiered, had only about 1000 seats, while the Theater an der Wien, rebuilt in 1801 and where the first version of *Leonore* sounded forth, had about 2200.[12] This creates a need for higher sound pressure level. In addition, despite numerous textual changes in the course of composition and revisions, Beethoven's work shows a greater emphasis on language, which is even more evident in Wagner. In this respect there are consonants that make it easier to vocalize the vowel that follows them, while others make it harder. In addition, complex or rapid consonant clusters or even diphthongs can lead to cumulative difficulties in stabilizing the voice in extreme ranges. Consonant-vowel connections tend to work smoothly in almost all forms in our speaking range because the vocal folds oscillate well and with stability in the relatively low tone range, but they are not always easy to produce at high sound pressure levels, with open vowels such as /a/, and high notes. So the diphthong from /a/ to /i/ and vice versa, as in the aforementioned line "zur Freiheit ins himmlische Reich" is very challenging, especially at such a high pitch.

It therefore makes sense to examine the parameters of pitch again with reference to *Fidelio*. Pitch regulation is achieved through the stiffness of the vocal folds and the pressure under the vocal folds. Stiffness can be influenced by various muscles. While the effect of subglottal pressure on sound pressure level has already been explained, this pressure also has an effect on pitch. Raising the pressure allows the voice to raise its pitch by about a third. At the same time, it must be mentioned here again

that this markedly increases the stress on the vocal folds. The pitch is mainly determined by the fundamental frequency and therefore by the lowest harmonic in the vocal sound. This frequency corresponds to vocal-fold oscillations per second. When a man speaks, his vocal folds oscillate about 100–120 times per second; in women, they move at almost twice that speed. When a person sings the chamber pitch A_4, the vocal folds oscillate 440 times per second. Some of the highest pitches of that time had been composed before Beethoven by Mozart, who composed with pitches up to one pitch above the Queen of the Night's aria (F_6). For a long time it was unimaginable that the vocal folds could oscillate that quickly. However, the author and his colleagues have demonstrably succeeded in producing them up to fundamental frequencies of more than 2200 Hz.[13]

Singing voices do not have to reach such a high pitch in Beethoven. However, one of the unpleasant aspects is that the singing voices often have to stay in what is known as *passaggio*. *Passaggio* is a range where transitions between the registers take place and it is hard to keep the voice from straying into the other register. But what are vocal registers? The voice is not homogeneous from the lowest to the highest pitch. Different pitch ranges with similar sound characteristics can be summarized as registers. Men are generally considered to have two main registers, chest or modal voice and falsetto, whereas women generally have three, chest or modal voice, middle range, and head voice. Between these registers there are differences in sound quality that yodeling tries to emphasize, but classical singing does not. Classically trained singers therefore try either to minimize the differences in sound quality or expand the limits of the register. At the very least, these extreme ends of the registers are biomechanically unstable and mechanisms for stabilization have to be found. These mechanisms include increasing the resistance in the resonant spaces, for example by using the nasal cavities or opening the mouth in different ways. The resonances themselves can stabilize as well as destabilize. In our own studies, tenors generally show more stable oscillation mechanics of the vocal folds when singing /a/ than when singing /i/.[14] In addition to stabilizing the oscillations, this creates a higher sound

pressure level because more sound can be expelled from the mouth. However, if a higher resistance is needed, some singers may do better by opening their mouths narrowly on a vowel. At the least, major differences in vowels should be avoided in this region. That is why it is tortuous to sing the repeated shift from /i/ to /a/ in Florestan's line "in das himmlische Reich," especially in the *passaggio* region. This aria becomes much easier if Florestan sings that passage considerably lower, as he does in *Leonore*, the early version of *Fidelio*.

The final answer given in the survey of singers about the difference between lyrical and dramatic singing was that the vibrato had a higher amplitude in dramatic singing. Vibrato denotes fluctuations in fundamental frequency at about 4–8 Hz. The extent to which this can be voluntarily controlled is not clear at present. Whether high-vibrato voices are well-suited to Beethoven is still an open question. During the last century alone, there has been a demonstrable change regarding which vibrato frequencies are considered beautiful. So it remains a matter of speculation whether Beethoven requires different vibrato frequencies from Mozart and Wagner.

Beethoven's only opera shows many instances of transition from lyric to dramatic singing. He was therefore giving singers unprecedented challenges—challenges that are still not easy to face today. Whether Beethoven's handling of operatic voices is considered lyric or an early example of dramatic style, his musical and vocal tone painting is incomparable and occupies an outstanding place in the history of opera.

Adnotations

[1] Schindler 1xx.
[2] Caeyers p. 380.
[3] Schindler 2xx.
[4] Caeyers p. 540.
[5] Parthey 1907, p. 85.
[6] Richard Wagner, *Mein Leben*, 1963, p. 49.
[7] Richard Wagner, *Mein Leben*, 1963, p. 48 sq.
[8] Thomas Seedorf *Stimmfächer Lexikon* p. 587 sqs.

[9] Rudolf Kloiber, *Taschenbuch der Oper*, Regensburg 1951; 8., revised and published as *Handbuch der Oper*, Kassel 1973; 9th, revised, expanded edition Kassel 2002, [12]2007 xx.
[10] Echternach, M., Burk, F., Traser, L., Burdumy, M., Richter, B.: What do professional opera singers change if they try to change singers' Fach? 44th Annual Symposium of the Voice Foundation, Philadelphia, USA, May 26 – June 1, 2015.
[11] ACM Bernoulli-Effekt, Lexikon p. 85.
[12] Weinzierl, p. (2002): Beethovens Konzerträume. Raumakustik und musikalische Aufführungspraxis an der Schwelle zum modernen Konzertwesen. Edition Bochinsky, Frankfurt a. M.
[13] Echternach, M., Döllinger, M., Sundberg, J., Traser, L., Richter, B.: Vocal fold vibration at high soprano fundamental frequencies. Journal of the Acoustical Society of America Express Letters 133:EL82–87, 2013.
[14] Echternach, M., Burk, F., Köberlein, M., Burdumy, M., Döllinger, M., Richter, B.: The Influence of Vowel Condition on Vocal Fold Dynamics in the Tenor's Passaggio, J Voice, 31:424–429, 2017.

Chapter 15

On the treatment of the human voice in Beethoven based on the examples of his vocal works *Leonore* and *Missa solemnis*

A conversation with René Jacobs

At the symposium, René Jacobs devotes himself to the question of peak vocal performance in Beethoven's compositions.

René Jacobs is one of the leading, most eminent conductors of our time. For nearly five decades, as a practicing musician, both singer and conductor, as the founder of the ensemble Concerto Vocale Ghent and long-standing director of the Innsbruck Festival of Early Music, as well as teacher at the Schola Cantorum Basiliensis, he has profoundly influenced our current understanding and experience of classical music and its reception. Those who wish to engage with his career path and his general conception of music are warmly recommended to read his book "Ich will Musik neu erzählen" (I wish to talk of music anew), which records his thoughts in extensive conversations with the musicologist Silke Leopold.[1]

René Jacobs is generally known as a specialist for so-called "Early Music" and for "historically informed performance practice." However, he has also received much praise from the public and from critics for his recordings of various Mozart operas, which he has performed and recorded with the Freiburger Barockorchester (FBO), among others, and has received important international prizes, such as the Grammy Award, the Classic Brit Critics Award, the Edison Klassiek – De Opera or the Annual Prize of the German Record Critics—to name just a selection.

In recent years he has expanded his repertoire into the 19th century, especially through the performance and recordings of

Beethoven's first version of his opera *Leonore* and the *Missa Solemnis*.

Bernhard Richter (**BR**) conducted a conversation with René Jacobs (**RJ**), which is documented in the following text.

BR: Dear René Jacobs. You are actually known as an interpreter of and expert on music of the 17th and 18th century. How did you yourself find an approach to Beethoven?

RJ: Initially I steered clear of Beethoven, as I was always very preoccupied with early music, above all baroque opera music. Then I approached Mozart slowly. Mozart's Singspiele, in particular, gave me the idea of tackling Beethoven's *Fidelio*. I knew that there are three versions, and I compared them. I found that the first version was the best. I was not the first person to hold this opinion, as there were already musicologists in the 19th century who took this view. And as an active singer, too, I already had my own approach to Beethoven, as I occasionally sang songs by him in my Lieder evenings with piano accompaniment, especially "To the Distant Beloved." In this case I performed a transposed version for low voice, i.e. for alto voice, because I found the music so beautiful. It's splendid music and very well written for the voice. Generally, I find that the Beethoven songs I know are not at all written "against" the voice. Because I appreciate Beethoven's songs so much, I have also—in the dialogues of *Leonore* (Op. 72a), which we have shortened and arranged for our current recording[2]—given Marzelline the well-known Beethoven song "Delicate Love" (WoO 123) to sing in her first appearance, a song that begins in the text by Karl Friedrich Wilhelm Herrosee with the words: "I love you, as you love me." Beethoven had already composed it some 10 years before and actually had not envisaged it for the opera *Leonore*. Because the public does not actually see anything in a CD recording, but just listens, we have done it in such a way as to convey to listeners in the musical atmosphere how much Marzelline is in love with Fidelio. In my opinion, it fits in very well here.

BR: How does Beethoven treat the human voice in his works? Is it true that Beethoven composed in a way that was "unfriendly to the singer"?

RJ: When I thought of Beethoven, I had long been influenced by the prejudices that already existed in the 19th century, that Beethoven cannot compose for the human voice. There were also historical comments from singers who had known Beethoven personally, for example, Henriette Sontag, who sang the soprano voice at the premiere of the *Ninth Symphony* (Op. 125) in 1824, [and] who said that she had never in her life sung anything so difficult. But there were also problems as early as 1805 at the production of the first version of the opera *Leonore*; there were especially difficult external circumstances, too, due to the war with Napoléon, there were too few rehearsals. Anna Milder (later Milder-Hauptmann), who sang Leonore in the premiere performance, complains a great deal that her aria is too difficult. The singer was still very young at the time, only just 20, like the above-mentioned Henriette Sontag, who was just 19 years old in 1824. In 1805 Milder had already been employed for two years at the "Theater an der Wien" and despite her youth had already developed into a singing star. So she for sure dared to tell Beethoven honestly what she thought, but Beethoven did not want to change a single note. However, we may not deduce from this that he did not listen to the singer at all, as a few months later, at the beginning of 1806, she also sang the second version of *Leonore* (Op. 72b) and here the aria has already become technically simpler. And she once again sang Leonore in *Fidelio* (Op. 72c) in 1814, where her aria is again shorter and thus easier to sing than in the first two versions.

One reads comments that the first version of the role of Leonore was written for a Fiordiligi from Mozart's *Cosi fan tutte*—that is correct, at least if one thinks of a very good Fiordiligi, who does justice to the high demands made by Beethoven, and that the third version, i.e. the Leonore in *Fidelio*, was written for a Senta from Wagner's *Flying Dutchman*—that is not right at all,

if we consider that the role in all three premieres was sung by the same singer, namely Anna Milder.

BR: Can it be that a mix-up occurred in someone's mind with Wilhelmine Schröder (Schröder-Devrient from 1823)?

RJ: That is possible, because Schröder-Devrient frequently sang Leonore from 1822 onwards—at the time she was only 17 years old—and at the same time in 1843 she sang the role of Senta in Wagner's *Dutchman* in the premiere. Beethoven was very enthusiastic about Schöder-Devrient's incarnation of Leonore, but at this time he was already very hard of hearing, so we may ask what he could really hear of her singing—perhaps he was also more taken with her much-vaunted expressive portrayal on the stage.

But one must admit that Leonore's aria in the first version goes to the limit of what a very good Fiordiligi can achieve vocally. Nonetheless, one doesn't need a dramatic voice, a Wagner voice, rather a lyrical voice that also has dramatic tones available in the accompagnato recitatives and the ensembles—at the end, of course, in the quartet with the pistol—but no more. For *Leonore* is a Singspiel in terms of its arrangement, and dramatic voices—the same applies for Florestan—cannot in general perform the spoken dialogs satisfactorily. In the first version of *Leonore*, Florestan still needs no "voix sombrée," i.e. no darkened voice, as was introduced in terms of vocal technique and tone by the singer Gilbert Duprez, only from 1837 onwards. Florestan's aria ends in F minor in the first version of the opera, very sadly. The vision "An angel, Leonore," where the singing voice reaches a high B, has not even been composed in this version. And the singer of the last version of 1814, Julius Radichi, sang a lot of French repertoire, so was rather a "haut-contre" than a dramatic singer in terms of the sound aesthetic. That also makes sense musically, for that is a vision of Florestan, it opens up heaven and tonally is rather the head voice. At the end of the 19th century everything has been "wagnerized", something I consider fundamentally wrong and could barely put up with in

performances of Fidelio I have experienced that were filled with such singers.

BR: Was Beethoven more an instrumental or opera composer?

RJ: One important teacher of Beethoven was Antonio Salieri. Beethoven had lessons with him in Vienna. The reason for that was not so much that he wanted to learn counterpoint from him, but rather that he wished to learn from him how to write an opera and how to compose for the human voice. He wanted to learn the principles of Italian opera from Salieri. What Beethoven then actually composed, however, is a German opera in three versions. Mention must be made of the *Missa solemnis* (Op. 123) as an important work by Beethoven that is not based on a German text. Here Beethoven studied the Latin text in great detail, admirably so, and attempted to capture its meaning down to the last nuance, also theologically, but in the setting to music he did not stick to the rules that he had surely learned with Salieri, whereby, for example, the vowel /a/ should preferably be used in a coloratura and not, as Beethoven did, counter to the rule, the vowel /i/. One could also describe the *Missa solemnis* as an occasion for a religious symphony with chorus, soloists and orchestra. Beethoven tried very precisely here to express the text's contents in sound symbols.

The criticism that Beethoven is unfriendly toward singers and even wrote against the voice comes in my opinion from the direction of choirs, who have tried to practice the *Missa solemnis* and have not managed it satisfactorily, as they couldn't really sing it. Especially when the attempt was made to perform this work with a choir and orchestra that was too large. Beethoven also followed this fashion, which had already developed with the performance of Handel's *Messiah* and Haydn's *Creation* and his *Seasons*: large line-ups with 600 or more participants in large performance halls. Proceeding in this way does not serve Handel's music either, yet in his case these masses can somehow be brought together, while with the *Missa solemnis* it is simply impossible. The performance of the work was already poor, according to contemporary reports of "ear-witnesses," at

the first performance in Vienna, which was a partial performance, as only three movements sounded (Kyrie, Credo and the Agnus Dei)—which Beethoven called three hymns at the time, in order to avoid problems with the church authorities. The choir conductor who rehearsed this at the time had probably also simplified some places in the choral score, e.g. in the Credo, where the four repeated entries on the high B in the soprano were possibly put down an octave. The whole concert was incredibly over-sized for our conception of it today, as the overture *The Consecration of the House* (Op. 125) sounded as another work, and the *Ninth Symphony* was given its premiere —the last-mentioned work alone generally lasts considerably more than one hour. Today, the planning of a concert in this way would be called unrealistic. Beethoven was already so deaf at this point in time, however, that he probably didn't get anything more from the actual performance in acoustic terms. The contemporary critics also couldn't cope with the *Missa solemnis* initially, either; the Kyrie was praised, but from the Gloria on, people only understood what the composer wanted on a bar-by-bar basis. While Beethoven was a genius, one was only able to understand his intentions later on. The negative criticism grew even louder throughout the 19th century, especially in the magazine "Caecilia."

Not until 70 years after Beethoven's death did a monograph appear in 1897 on the *Missa solemnis* by a certain Wilhelm Weber.[3] He analyzed the tonal symbolism in the *Missa* very precisely and put forward the thesis that the frequently very high register in the soprano is a symbol for how far away heaven is from us, how far away God is from mankind. There are several places where the choir almost has to scream, above all the poor sopranos, of course. Presumably what is hidden behind this is a criticism on the part of Beethoven of the text, in the Credo, for example, where there was a very controversial theological dispute—which cost the lives of many until the Council of Nicea in 325 CE—which concerned whether God the Father and Christ have the same "substance"—in Latin, "con substantialem patri," which translates into English as "of one being with the Father." One hears the choir screaming almost fanatically here,

because this conflict was waged so fanatically. These passages that are composed "against" the voices were thus not created by chance, but rather follow a particular intention. The high tessitura is very deliberately chosen, for example in the fugue in the Credo over the five words: "et vitam venturi sæculi. Amen," which stretches over almost 300 bars, in which the whole chorus gradually rises and has to sing synocopations that are very hard to execute. Wilhelm Weber uses the metaphor here that it sounds as if one is climbing a high mountain because one hopes to find God up there. For these passages that are so hard to sing, one needs a phenomenal choir; as a rule it is too difficult for an amateur choir. In the last part of the fugue that I have mentioned, the solo voices then come in, who for me embody in the *Missa* the angels, while the choir symbolizes those on earth, who are attempting to become heavenly—the sopranos, above all, believe that they will able to make it after all.

In other parts of the *Missa*, in contrast, the music sounds very inspired and so lovingly composed, as if written by another Beethoven, those parts namely where themes are treated that probably touched Beethoven very personally, such as the dogma that the son of God becomes a man, for instance, or the Passion. Beethoven felt himself connected to a higher power, he often used the term divinity. After all, he was so to say a church musician in his youth in Bonn, he played the organ in the church where his father sang; later on he no longer went to church, yet one can certainly describe him as religious. In the diaries there are splendid parts in which he describes how he finds God in the sky at night, etc.

BR: Did this treatment of the human voice also have something to do with his deafness, in your opinion?

RJ: I have often thought so. If we look at the autograph of the *Missa solemnis*, which also exists as a facsimile,[4] then we can see in the writing style that the dynamics and other performance markings are very impulsive, a lot of fortissimo, sforzato etc., almost as if he were furious. One can imagine that his rage was caused by his knowing that he would never be able to hear the

music. Beethoven engaged intensively with Socrates and Christ in his diaries. Both had been accused by "manipulators," both were condemned and executed. For Beethoven, both symbolized "suffering." Beethoven knew well the meaning of suffering due to the wide variety of his own physical and mental ailments. He identified with these historical figures.

But, in my opinion, Beethoven never wrote music that was unplayable or unsingable. The soprano parts in the *Missa* are also singable. The dynamic for the choir can also be optimized by the placing of the singers, as we have practiced in our concerts and in the recording of the *Missa solemnis*, which we have just done with the FBO and RIAS-Kammerchor[5], whereby the singers of the choir are placed in front of the orchestra and not behind it. One understands every word then.

BR: Dear René Jacobs, we could for sure speak on the topic of Beethoven and the human voice in even greater detail, but please accept our warm thanks for giving us so much of your time.

RJ: With pleasure.

Adnotations

[1] René Jacobs im Gespräch mit Silke Leopold: *Ich will Musik neu erzählen*. Bärenreiter Henschel, Kassel 2013.
[2] Ludwig van Beethoven: "Leonore" (1805). Marlis Petersen (Leonore), Maximilian Schmitt (Florestan), Dmitry Ivashchenko (Rocco), Robin Johannsen (Marzelline), Johannes Weisser (Don Pizarro), Tareq Nasmi (Don Fernando), Freiburger Barockorchester; Zürcher Sing-Akademie; Conductor: René Jacobs, Harmonia mundi 2019.
[3] Weber, Wilhelm (1908) Beethovens Missa Solemnis. Eine Studie. Neue, durch einen Anhang erweiterte Auflage. Leipzig, Leuckart.
[4] Obtainable as a facsimile at:https://www.baerenreiter.com/shop/produkt/details/BVK2395/ (accessed on 23.03.2020).
[5] The release of this recording as a CD is planned for late 2020 under the harmonia mundi label.

List of Contributors

Malte Boecker
(* 1970) is the director of the Beethoven-Haus Bonn and Artistic director of the Beethoven Jubiläums GmbH, which has been ordered by the German government, the federal state of North-Rhine-Westphalia and the city of Bonn to coordinate and market the Beethoven anniversary in 2020. Before his current position, Mr. Boecker worked for the Bertelsmann Foundation and at the manager's office of "Weimar 1999 – European Capital of Culture". There, he oversaw the foundation of the West-Eastern Divan Orchestra consisting of Arab and Israeli musicians, initiated by Daniel Barenboim and Edward Said.

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In 1995 he was appointed to the Chair of Otorhinolaryngology at the University of Leipzig, in 2002 he was appointed to the Chair of Otorhinolaryngology at the University of Bonn. In March 2010 he was awarded an honorary doctorate from Victor Babeş University in Timişoara, Romania. From 2001 to 2002 founding president of the German Society for Computer and Robot Assisted Surgery, from 2002 to 2003 President of the German Society for Plastic and Reconstructive Surgery, from 2003 to 2005 President of the German Society for Skull Base Surgery, from 2007 to 2008 President of the German Society for Otorhinolaryngology, Head and Neck Surgery, from 2009 to 2012 General Secretary of the German Society for Otorhinolaryngology, Head and Neck Surgery and from 2010 to 2019 Treasurer of the Spanish-German Society of Otorhinolaryngology.

Clinical-scientific focuses are oncological research, oncosurgery including reconstructive procedures in the head and neck

area and surgical navigation and robotics. 231 original papers, 65 book contributions and 13 books can be cited as publications.

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Studied music, theatre and literature at the Free University of Berlin. From 1973 to 1976 she was a research assistant at the Musicology Institute of the Free University of Berlin. Afterwards she completed several internships for music therapy at the Clinic of the Medical University in Hannover and gave music lessons.

1989 Dissertation (*A. B. Marx and Beethoven in the Berliner Allgemeine Musikalische Zeitung (1824–1830)*). In it, she examined the genesis of the musical myth of Beethoven. The book was published in bookshops titled *How Beethoven was set on the pedestal*.

Since 1978 Eleonore Büning has published essays for specialist music journals; since 1983 she has written about music for the Berliner Tageszeitung, subsequently for the Weltwoche in Zurich, the Rheinische Merkur and the radio, too. In 1994 she became music editor for the Zeit newspaper (Feuilleton supplement). In 1997 she moved to the Frankfurter Allgemeine Zeitung; since 2008, she has been editor of the feature section of the Frankfurter Allgemeine Sonntagszeitung. In addition, she presents music programs at WDR 3.

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Custodis studied musicology, sociology, comparative political science, educational science and film studies, initially at the University of Mainz. He then moved to the University of Bergen (Norway) and finally to Albrecht Riethmüller at the Free University in Berlin. He received his diploma in sociology, his doc-

torate in musicology and his habilitation at the Free University of Berlin.

His main fields include music sociology and music aesthetics, music and politics, especially concerning National Socialism and its continuities in European post-war music life, and interactions between "popular" and "classical" music.

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Previously he worked at the Freiburg Institute for Music Medicine from 2006 to 2018. In 2010, he received his habilitation as an ENT specialist at the Medical Faculty of Freiburg University.

In 2012, offered the W3-Professorship for Music Medicine at the Hanns Eisler Music University Berlin (offer rejected). In 2013, appointed Associate Professor at Freiburg University.

His main research areas cover the influences of the vocal tract on the vocal register, the regularity of vocal register transitions and stage fright in singers.

Echternach received his first voice training in the Hannover Boys' Choir. Later, he received voice lessons from Peter Sefcik and Winfried Toll. Currently, besides appearing as a soloist, he sings in various ensembles such as Stuttgart Chamber Choir (Frieder Bernius). From 2010 to 2014 he served on the board of the BDG (Bundesverband Deutscher Gesangspädagogen).

Norbert Flörken
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first book, "Troisdorf under the Swastika", which was followed in 2009 by a volume of sources and in 2013 by a second edition. Since 2013, he has published several source volumes on a variety of subjects including the Cologne War of 1583, the Reuchlin-Pfefferkorn controversy of 1505 and following, the sieges of Bonn in 1673, 1689 and 1703, the French years in Bonn of 1794 to 1814, the Bonn soldiers in Napoleon's army in 1812, the travel reports from the Rhine of 1780 and following, and finally on the Bonn professors F. G. Wegeler, F. Wurzer, Eulogius Schneider and J. C. Rougemont. He has maintained his own website since 1998: www.floerken.eu.

Assistant Professor Dr. phil. Gregor Herzfeld
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After studying musicology and philosophy from 1996 to 2001 at the Ruprecht Karl University of Heidelberg, and at the 'Scuola di Paleografia musicale' in Cremona, he worked in Heidelberg as research assistant to Silke Leopold. From 2005 to 2006, he researched at Yale University in New Haven, Connecticut with financial assistance from the German Academic Exchange Service. His doctorate followed in Heidelberg in 2006 with a work on experimental American music (Steiner Verlag, 2007).

From 2007 to 2015, he was research assistant at the Department of Musicology at the Free University of Berlin under Albrecht Riethmüller and editor of the magazine *Archiv für Musikwissenschaft*. There he gained his habilitation in 2012 with a work on Edgar Allen Poe in music (Waxmann Verlag 2013, habilitation rerouted to Basel, 2017). During the winter semester of 2012/13 he deputized for the professorship for Historical Musicology of Wolfgang Rathert at the Ludwig-Maximilian University in Munich.

Between 2015 and 2018 he was the dramaturge at the Freiburg Baroque Orchestra and handled the press and PR tasks there. His research focuses on the music of the USA, transfer

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René Jacobs
(* 1946) is a Belgian conductor and singer (counter-tenor).

Jacobs studied philology at the University of Ghent, taking singing lessons with Louis Devos and Alfred Deller at the same time. Before turning entirely to music, he was a teacher of Latin and Greek for three years. In 1977 he founded the vocal ensemble Concerto Vocale Gent. Afterwards he was several times conductor at the Innsbruck Early Music Festival.

Jacobs is known as a specialist for historical performance practice of early music and baroque operas. He works with renowned orchestras and ensembles such as Concerto Köln, the Akademie für Alte Musik Berlin, the B'Rock Orchestra, the Nederlands Kamerkoor, the Freiburger Barockorchester and the RIAS Kammerchor, among others.

Since 1988 Jacobs has conducted at the *Centre de musique baroque de Versailles*. He has also taught at the Schola Cantorum Basiliensis. From 1997 to 2009 he was artistic director of the Innsbruck Early Music Festival.

As a conductor, he completed the instrumental parts of several baroque operas, and provided ornamentation for the vocal lines. Numerous CD and DVD recordings exist that he has con-

ducted. Among others, he received the Classical Grammy Award 2005 for the best opera recording with Mozart's *Marriage of Figaro*. His contribution to the international reception of Telemann was honored in 2008 with the Georg Philipp Telemann Prize.

With the Freiburg Baroque Orchestra and the Zürcher Sing-Akademie he recorded Ludwig van Beethoven's opera *Leonore* in the original version.

Werner Köttgen
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Werner Köttgen passed his examination for the master's certificate in hearing aid acoustics in 1969 and was one of the founding members of the "Research Council of German Hearing Aid Acousticians" (FDHA) in 1985. From 2000 to 2007 he was managing director of the "Good Hearing" Promotion Association. At the same time, he was a volunteer on the board of the European Union of Hearing Aid Acousticians (EUHA) from 1972 to 2012.

The Köttgen family owns an extensive collection of historical and modern hearing aids.

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Further training to become a consultant in Phoniatrics and Paediatric Audiology as well as consultant in ENT medicine, including specialized ENT surgery.

From 2010 Professorship in Phoniatrics and Pediatric Audiology at the Dresden Technical University as director of the Department of Phoniatrics and Audiology and the Saxon Cochlear Implant Center Dresden. In 2018 he was invited and accepted the Professorship (W3) for Audiology and Phoniatrics at the Charité in Berlin.

His work as a doctor covers the entire spectrum from communication disorders with the emphasis on operative and conservative treatment of patients with voice disorders, especially professional singers and actors/actresses. Consultation and treatment of deafness form a further clinical focal area requiring particular expertise from a music-medicine viewpoint. In terms of research, he is especially involved with morphological and functional characteristics of professional voices and the electrophysiological objectification of hearing and speech acquisition.

He is a member of national and international scientific committees in his specialized area, including sitting on the board of the German Society for Phoniatrics and Pediatric Audiology and at present is active as General Secretary of the PanEuropean Voice Conference (PEVOC). He teaches vocal sciences for singers at the Mozarteum University Salzburg; in addition, he has a long-standing association with the Dresden University of Music Carl Maria von Weber as head of the Studio for Voice Research.

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In addition to his medical studies in Freiburg, Basel and Dublin, he studied voice at the University of Music in Freiburg, concluding it with a Concert Examination in 1991. After receiving his M.D., specializing in ENT and Phoniatrics (voice specialist), he completed his Ph.D. in 2002.

At the FIM, apart from giving instruction in the areas of voice physiology and hearing, he is specifically responsible for the medical counselling of musicians and singers at the Center for Musicians' Medicine.

His current research emphasizes the areas of the operatic stage as a place of work, the use of high-speed glottography for examining the register functioning of singers, the vocal development of singers in the course of aging, and hearing protection for orchestral musicians. He is author of several text books as well as of the two DVDs "Physiological insights for players of wind instruments" and "Insights into the physiology of singing and speaking".

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From 1992–1998 he was a trainee doctor / research assistant at the ENT Clinic of the Hamburg-Eppendorf University Medical Center (UKE) (then Director: Univ. Prof. Dr. U. Koch) and from 1992–1996 (honorary) theatre doctor in Hamburg. From 1998–1999 he was a research assistant at the ENT Clinic of the Otto-von-Guericke University Magdeburg (then Director: Univ. Prof. Dr. B. Freigang). From 1999–2005, he was a research assistant (from 2003, effective senior physician) at the Polyclinic for Hearing, Voice and Speech Medicine of the UKE (then Director: Univ. Prof. Dr. M. M. Hess). Since 2005 he has been head of the Department of Phoniatrics & Pediatric Audiology

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Prof. Dr. phil. Thomas Seedorf
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Seedorf initially studied music for school and German in Hannover. He then completed studies in musicology and music pedagogy at the Hannover University for Music and Theatre (doctorate gained in 1988 with a dissertation on the compositional reception of Mozart in the early 20th century).

From 1988 to 2006, Seedorf was a research assistant at the Musicology Department at the University of Freiburg. Since 2006 he has been Professor of Musicology at the Institute for Music Informatics and Musicology at the Karlsruhe University of Music.

Seedorf researches primarily in the areas of history and analysis of the Lied, performance practice and history of interpretation, with special emphasis on the theory and history of the art of singing.

Together with Michael Fichtenholz, he is artistic director of the International Händel Academy in Karlsruhe. In addition, Seedorf is chairman of the International Schubert Society, project head of the new Schubert edition, and co-editor of the Max Reger edition of works.

Among his most recent publications are the study "Heroic sopranos. The voices of the eroi in Italian opera from Monteverdi to Bellini" (2015) and the "Handbook of Performance Practice for Solo Singing" (2019).

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From childhood she received lessons in playing the recorder, piano and violin. After graduating from high school, she studied medicine in Freiburg, Paris and Switzerland, at the same time commencing musical studies at the University of Music Freiburg in 1986, which she concluded in 1992 with a diploma as a music pedagogue. Specialized training in the Department of Psychosomatic Medicine and Psychotherapy at the Freiburg University Clinic (as well as in Internal Medicine and Psychiatry) led to her certification as a specialist for Psychotherapeutic Medicine in 1999. Her M.D. was followed by the habilitation in 2004 concerning prevention in musicians and a Dr. phil. in musicology in 2020.

At the FIM, apart from her role as Director, she is principally responsible for the instruction of the music students at the Freiburg University of Music, as well as for research and treatment. In collaboration with a physiotherapist, she advises instrumentalists with motor dysfunctions, also dealing with primary or collateral psychosomatic and psychological questions using an integrated psychosomatic therapeutic approach. Here she works with instrumentalists and singers on stage fright and performance anxiety, her main focus.

She is first editor of the German textbook "Musicians' Medicine", author of the textbook "Stage Fright" and first editor of the DVD "Physiological Insights for Players of Wind Instruments". Furthermore, she is co-editor of the DVD "The Voice. Insights into the Physiology of Singing and Speaking" as well as the editor of the book "Musicians' health in practice". Her latest book is "Body-related methods for musicians", published in May, 2017.

She sat on the board of the "German Society for Music Physiology and Musicians' Medicine" from 2006 to 2014 and has been Vice-Rector of the University of Music Freiburg since 2018.

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2014 member of the governing of the German Transplantation Society (DTG), chair of the organ commission liver and intestinal transplantation. 2015 appointment as chair of the liver allocation policy committee of the German Chamber of Physicians, Berlin (Bundesärztekammer – BÄK). 2015 elected as president of the Northrhine Westphalian Society for Gastroenterology. 2016 member of the Scientific advisory board of the German Chamber of Physicians (BÄK), president elect of the German Society for Transplantation (DTG). Research topics: Liver and solid organ transplantation, pharmacogenetics, autoimmune liver diseases, molecular carcinogenesis, chronic liver diseases, drug metabolism and drug toxicity, hepatocellular carcinoma, gastrointestinal oncology.

Felix Wegeler
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The year 2020 marks a special anniversary in our engagement with Ludwig van Beethoven, for it was in this year that he was born in Bonn exactly 250 years ago.
The various contributions contained in the present volume paint a portrait of the composer in which music-medical perspectives on Beethoven are investigated and categorized in their historic context. Topics covered include the etiology of Beethoven's hearing impairment, current possibilities of treatment and interaction between handicap and creativity. It brings together the lectures from the symposium *Ludwig van Beethoven: the Heard and the Unhearing – A Medical-Musical-Historical Journey through Time*, which took place on October 16th/17th 2020 at the University Clinic Bonn. Sponsorship has been provided by the Beethoven Anniversary Society BTHVN 2020, with scientific coordination of the symposium led by the Freiburg Institute of Musicians' Medicine, in cooperation with the University Clinic Bonn.

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