

Review

**Alfons Huber, Clavichordbau 1400–1800.
Zur Konstruktions- und Entwicklungsgeschichte des
empfindsamsten aller Tasteninstrumente,**
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It was a genuine but intimate event, a kind of festive litmus test: the book's "preview" on May 24, 2024, a good year before its actual publication, featuring eleven clavichords played by eight different artists in the Collection of Historic Musical Instruments (Sammlung alter Musikinstrumente / SAM) at the Kunsthistorische Museum in Vienna (KHM). Now, a quarter-century after Bernard Brauchli's seminal *The Clavichord*,¹ this new fixed star in the organological firmament is ready to be admired. Brauchli had written a history of the instrument's development, "from its modest beginnings to its culmination as a medium for the expressive extremes of the *empfindsamer Stil* in eighteenth-century Germany" (p. 1). Based on his analysis of fifteen instruments—initially selected without a plan and later chosen to achieve a balanced sample rather than according to a strict system—, Alfons Huber takes a different approach, one grounded in his experimental reconstructions of the instruments he studied; Brauchli, by contrast, had merely played them as part of his research.

Despite the merits of Brauchli's work, criticisms had long been leveled at its dry writing style, the lack of discussion on tuning and temperament, the insufficient musical context, an unclear target audience, the poor quality of its black-and-white illustrations, and the use of endnotes instead of footnotes. Huber's *opus summum*, published by the KHM as a "scientific institution under public law,"² surpasses Brauchli's in both ambition and execution. Of course, a book devoted to the period from 1400 to 1800 contains no references to modern instruments like the Edelan 6061 aluminum clavichord (designed by Dale Reynolds c.2011)

or to recordings by, for example, Red Camp,³ Friedrich Gulda,⁴ Keith Jarrett,⁵ or Lyndol Descant.⁶ Huber writes vividly and with personal flair, which—despite the series’ meticulous and specialized content aimed at insiders—makes for a welcome, reader-friendly choice. Tuning and temperament are described in detail, and the numerous illustrations in this opulent volume are printed on paper of the highest quality. However, like Brauchli, Huber opts for endnotes instead of footnotes, and while there are few comments on “the music itself,” there is plenty on the sound. What is important and new is the way he explains how the different clavichords function.

Alfons Huber has followed a remarkable path: trained at the Academy of Fine Arts in Vienna, he worked from 1983 to 2019 as an executive conservator of the SAM. His 1981 thesis “Frühtechnische Verfahren der Drahterzeugung” (Early Technical Methods of Wire Production) and 1996 habilitation thesis at the same institution are absent from the Academy’s catalog, though the former is available as a printed essay,⁷ while his 2011 dissertation *Ökosystem Museum. Grundlagen zu einem konservatorischen Betriebskonzept für die Neue Burg in Wien* (Museum Ecosystem: Foundations for a Conservation-Oriented Operational Concept for the Neue Burg in Vienna) is included. Many readers will be familiar with his article on piano-making for the *Oesterreichische Musiklexikon (oeml)*,⁸ while specialists and enthusiasts will know the works he (co-)edited, such as those on the “Austrian Harpsichord”⁹ and the “Viennese Clavier until 1850,”¹⁰ not to mention his contributions to the *De Clavicordio* conferences in Magnano. A deep intertwining of restoration, conservation, and instrument-making practices—and the research guided by them—runs through Huber’s activities as a clavichord enthusiast, and it comes to the fore in a very personal way in this impressive “bible.” His initial questions sound matter-of-fact, such as “How does one build a clavichord for a specific tuning/temperament using only a folding rule and a compass?” (Wie baut man ein Clavichord für eine bestimmte Stimmung/Temperatur nur mit Zollstock und Zirkel?; p. 19). The result is not merely an instrument, or fifteen instruments, but a vital “workshop manual” (Werkstattbuch).

In his [clavichord article](#) for the *oeml*,¹¹ Huber writes that *Bebung* (vibrato), the “carrying of the tones” (Tragen der Töne; a gentle pressing down in slow passages, or portamento), and the richness of overtones make the instrument the “most sensitive of all stringed keyboard instruments” (zum empfindsamsten aller Saitenklavierinstrumente). Although Huber deliberately argues against the myth of progress in the book, this superlative—“most

sensitive”—which represented the pinnacle in Brauchli’s work, remains the description of the clavichord’s special quality as a whole (subtitle and bridge to Part 6, “Instruments”). Does this mean that, ultimately, despite all historical distinctions, Schubart’s dictum describing the clavichord as “the soundboard of your heart” (deines Herzens Resonanzboden; not mentioned in the book)¹² serves as the timeless gold standard?

For Huber, the instrument’s fascination for most listeners lies in its sound. In contrast to other keyboard instruments, the tone can be influenced to a certain extent even after the key has been struck, while a second factor is the “comprehensive structure of overtones” (lückenlose Obertonaufbau) produced upon striking the key (p. 18). It is precisely these phenomena that he cites in the *oeml* article to declare the clavichord the “most sensitive” keyboard instrument—a characterization he does not elaborate on in the book. Huber declares that he has always been more interested in construction than in sound (*ibid.*), since sound is the “result of technological and material-specific parameters” (Ergebnis technologischer und materialspezifischer Parameter), and the book’s focus reflects this accordingly. Jim Thvedt, who used a fresco depiction of a clavichord in a chapel in Naples as the basis for a replica, serves as an example of the approach to experimental archaeology Huber adopted as a model, though, unfortunately, the link provided no longer appears to work (last accessed June 6, 2023, according to note 161 on p. 106).¹³

How can this fascination with sound be explained? Huber turns to Pythagoras for an explanation: the laws of the cosmos correspond to those of the soul, which “resonates upon perceiving or sensing this order, an experience that is felt as harmony or ‘beauty’” (beim Wahrnehmen bzw. Empfinden dieser Ordnung in Resonanz, was als Wohlklang oder „Schönheit“ erlebt wird, p. 28; including a reference to its “correspondence” [Übereinstimmung] with quantum physics). Huber emphasizes that the aspect of sound did not previously hold the significance it did in the late eighteenth century or during the period of rediscovery beginning in the 1950s. According to the sources, sound was not a decisive factor in the instrument’s early days; what mattered then were the “mathematically correct pitch positions” (mathematisch richtigen Tonpositionen), a point he later reiterates (p. 264). Initially, the focus was primarily on “mastering the technological difficulties and framework conditions” (Beherrschen der technologischen Schwierigkeiten und Rahmenbedingungen). There were apparently “no fixed notions of sound” yet (noch keine fixen Klangvorstellungen), which is why “timbres

other than those expected today would likely have been perceived as new and therefore as ‘beautiful’” (andere als die heute erwarteten Klangtimbres als neu und daher als „schön“ empfunden). If, as Schubart suggests, a clavichord is the soundboard of the human heart, then the soundboard of a clavichord—the “soul” (Seele) of the instrument (p. 96)—requires a special type of tonewood. A note regarding maple, spruce, and rosewood veneer in various historical instruments states: “We are still far from fully understanding and comprehending the tonal effects of soundboards made from different woods” (Die klanglichen Auswirkungen von Resonanzböden aus unterschiedlichen Hölzern haben wir noch lange nicht alle verstanden und nachvollzogen; p. 107, note 167). Other indispensable factors affecting sound include the stringing, the “correct pitch” (richtige Stimmtonhöhe), the string length, and the positions and design of the tangents. All of these are analyzed and presented in detail, drawing on the clavichord archaeologist’s wealth of experimental experience.

The section “Aftermath” (Nachklang) includes a reference to the Bible verse “Ut in omnibus glorificetur Deus” (So that in everything God may be glorified; 1 Pet. 4:11), and some seemingly uncritical allusions in the book itself might be a bit jarring. In the chapter on intellectual history, for example, the author gratefully recalls Rudolf Haase’s courses on *Harmonikale Grundlagenforschung*, which provided him with “essential inspiration” (wesentliche Impulse; p. 45). Yet, even after Bernard Brauchli’s foundational book and Stewart Pollens’ *History of Stringed Keyboard Instruments*¹⁴—which, of course, also includes sections on the clavichord—there is certainly still room for a stimulating exploration of the “most sensitive of all keyboard instruments,” as the subtitle of Huber’s book suggests. The reviewer wonders whether Laurence Sterne’s notion of the “sentimental” (as in *A Sentimental Journey*) might provide a more appropriate characterization than “sensitive,” but the conceptual difficulty remains: while we are familiar with the sentimental style (empfindsamer Stil), can a distinctly human quality of the soul from the enlightened eighteenth century be transferred to a musical instrument spanning the period from 1400 to 1800? Is *Empfindsamkeit*—a category of perception, a human capacity in the Kantian sense—properly attributable to the “faithful Clavier” (treue Clavier)? More plausibly, the clavichord should be understood as a means for cultivating a school of *Empfindsamkeit*, in which it is the human being, the “heart,” the “soul” that is sensitive, not the tool. Further elaboration on this point would be welcome.

This book of books acquires the character of an authoritative treatise not least through its impressive scope. Fundamental premises are presented in six chapters, lovingly illustrated with numerous images, graphics, and tables, before turning to the main body of the work: a detailed portrait of fifteen (re)built clavichords, spanning a period of four centuries (pp. 469–735). A good hundred pages are devoted to “Sources on the Clavichord and Clavichord Construction” (Quellen zum Clavichord und Clavichordbau; with translations), about seventy pages to “String Wires, Pitch, and Scales” (Saitendrähte[n], Stimmtonhöhe, Messuren), the chapter “Temperaments and Binding Systems” (Temperaturen und Bindungssysteme) runs to just under sixty pages, and “Construction Aspects” (bautechnische Aspekte) are in turn covered in a hundred pages (under Aby Warburg’s motto “God is in the details” [Der liebe Gott steckt im Detail]; p. 359). Here, practical experiences are discussed, including the instruments as “teachers” (Lehrmeister), as well as tips from friends and colleagues and the author’s own “mistakes” (Fehler).

An accessible writing style does not mean a text without prerequisites, and what interests the instrument maker will not necessarily interest the player. The explanations on the topic of sound (for example, in the section “The Vain Longing for the Original Sound” (Die vergebliche Sehnsucht nach dem Originalklang), starting on p. 663 in which the Hass clavichord is discussed) may interest players more than mathematics enthusiasts; the musicologist interested in organology, in turn, may appreciate some of the digressions more than a follower of Haase’s “harmonic” school. The final major section of the book—which is not intended to be a construction manual for fifteen instruments, but rather, as Huber himself writes, an “autobiography as an instrument researcher” (Autobiografie als Instrumentenforscher; p. 469)—offers manifold insights for a musicology inspired by instrument-making. According to Huber, the various types of instruments were fully developed for their respective musical contexts but came to be regarded as deficient by later generations. In the process of eliminating these “deficiencies” (Mängel), new weaknesses emerged, not least because some of the qualities and strengths that had previously existed were lost in the process (see also p. 18 et seqq.). All of these instruments are presented as thoroughly as they are thoughtfully. Some are better known, others less so, ranging from a “well-founded fiction” (begründeten Fiktion)¹⁵—the Viennese clavichord by Johannes von Zwickau, c.1400—to an instrument for Froberger and Bohák’s instrument for Haydn. They were not only built by Huber but also, alongside

him or on his behalf, by Albrecht Czernin (Mozart's Stein travel clavichord), Ina Hoheisel (Huber's successor at the SAM; Zwickau, Stary Sącz, Leipzig 3, Froberger, Bohák), and Marianne Siegl (Prätorius, MIR 1047 / Nuremberg).

The introductory chapter on the history of ideas is underpinned by a peculiar mix of secondary sources. Huber discusses his "interest in numbers, proportions, and the Pythagoreans' intellectual world" (Interesse für Zahlen, Proportionen und die Gedankenwelt der Pythagoreer) as well as the gaps in knowledge he has uncovered. In Rupert Riedl, he has found a combatant with the courage to take a holistic view.¹⁶ Readers trained in musicology would likely find the former more agreeable if authors such as Frieder Zaminer¹⁷ and Joscelyn Godwin¹⁸ were cited as references rather than, say, Hans Kayser¹⁹ and Rudolf Haase.²⁰ Perhaps the historical dimensions of proportions, analogies, and symmetries can be disentangled from a lived-world longing for cosmic order in the sense of an "acoustic worldview" (akustischen Weltbilds; Kayser²¹). The resulting instruments are certainly fascinating. Apparently, authors scarcely known in the field, such as Martin Schleske,²² Wolfgang Strohmayr,²³ or Hartmut Warm,²⁴ have, to a certain extent, contributed to this, just as the frequently cited "harmonists" have. Nevertheless, the book as a whole remains a fascinating introduction to the instrument.

With a 29-cm spine (encyclopedia octavo) and weighing about 3.5 kg, this is a true table book. In the print edition, readers must flip to the end of each of the six parts for the notes (those for Part 1 begin on p. 103, those for Part 2 on p. 210, and so on), and then continue to the bibliography, which lists the abbreviated references (pp. 760–775). Thanks to the freely available online edition, including a complete PDF, the references can instead be consulted on screen (https://repository.khm.at/viewer/image/1520192659/1/LOG_0000/); a printout of the bibliography in A3 format is also helpful.

Funnily enough, the references themselves "don't work" at one crucial point. "This has nothing to do with numerology" (Mit Zahlenmystik hat dies nichts zu tun), as stated in the discussion of the Tetraktys (p. 29), yet the cited website, *tetraktys.de*, is "not secure"—perhaps it still was when it was last accessed, on March 28, 2023. Incidentally, the author of the website is Holger Ullmann (not Ullman), and there is no article on the Tetraktys at holger-ullmann.de. This brings us to a few minor details that escaped the copy editor. In such a voluminous book, standardizing spellings is, of course, a laborious task. Both "Potential" and "Potenzial" are used; "Gulbenkian" should replace "Gulbencian"

(p. 761); and hyphens are frequently missing, for example, "Andreas Putz-Orgel" (p. 263) instead of Andreas-Putz-Orgel or "Stary Sącz-Clavichord" (p. 463, note 156; 547, etc.) instead of Stary-Sącz-Clavichord. There is also some uncertainty in the spelling of compound terms such as "van-Hemessen-Clavichord" (p. 524) instead of Van-Hemessen-Clavichord or "van-Hemessen-Porträt" (p. 522) and similar constructions. Other inconsistencies occur in combination with italicization, for example "*dulce melos*-Instrumente" instead of *Dulce-melos*-Instrumente and several instances of "*dulcia mele*" (pp. 137 et seq., 487). The bibliography also gives the impression that the chapter on Boethius in Volume 3²⁵ of the *Geschichte der Musiktheorie* extends to p. 252, whereas it actually ends on p. 217, after which Detlev Illmer's contribution on "Boethius's Theory of Numbers" begins. Equally surprising is the inclusion of the entire 1954 edition of *Grove* in the bibliography, although only the article on "Chekker" is cited. None of this, however, detracts in the slightest from the pleasure of this inspiring volume. It is warmly recommended to lovers of beautiful books, to art historians and philosophers with an interest in music, to musicians (not only keyboard players), and to musicologists—not just organologists and clavichord makers.

Notes

1. Bernard Brauchli, *The Clavichord* (Cambridge Musical Texts and Monographs), foreword by Christopher Hogwood (Cambridge: Cambridge University Press, 1998).
2. "The Museum." Kunsthistorisches Museum. Accessed July 8, 2026. <https://www.khm.at/en/museum>.
3. LP Jimmy Carroll and Red Camp, *Speed the Parting Guest: The Hot-Tempered Clavichord*, Cook 1041 (1953); and LP Red Camp, *The New Clavichord*, Cook 1133 (1957).
4. CD Bach Gulda *Clavichord The Mono Tapes*, Berlin Classics 0301063BC (2018); and CD Friedrich Gulda, *The Stuttgart Solo Recitals 1966–1979*, SWR19081CD (2019).
5. CD Keith Jarrett, *Book of Ways* (2 CDs), ECM Records 831 396-2 (1987) and ECM 1344/45 (2023).
6. CD Lyndol Descant, *Dave Brubeck's Nocturnes* (Edelan clavichord; 2012, now available via Apple or Spotify).
7. Alfons Huber, "Frühtechnische Verfahren der Drahterzeugung," in *Restauratorenblätter der Österreichischen Sektion des IIC 8: Diplom- und Seminararbeiten an der Meisterschule für Konservierung und Technologie der Akademie der Bildenden Künste in Wien*, ed. M. Koller and R. Prandtstetten (Vienna: Mayer & Comp., 1985/86), 57–67.
8. Alfons Huber, "Klavierbau," in *Oesterreichisches Musiklexikon online*, founded by Rudolf Flotzinger, ed. Barbara Boisits, last modified March 22, 2022, accessed July 7, 2026, <https://dx.doi.org/10.1553/0x0001d49b>.
9. Alfons Huber (ed.), *Das österreichische Cembalo. 600 Jahre Cembalobau in Österreich* (Tutzing: Schneider, 2001).
10. Beatrix Darmstädter, Alfons Huber, and Rudolf Hopfner, eds., *Das Wiener Klavier bis 1850: Bericht des Symposiums "Das Wiener Klavier bis 1850" veranstaltet von der Sammlung alter Musikinstrumente des Kunsthistorischen Museums Wien vom 16. bis 18. 10. 2003* (Tutzing: Schneider 2007).
11. Alfons Huber, "Klavichord (Clavichord)," in *Oesterreichisches Musiklexikon online*, founded by Rudolf Flotzinger, ed. Barbara Boisits, last modified April 25, 2003, accessed July 7, 2026, <https://dx.doi.org/10.1553/0x00028306>.
12. Christian Friedrich Daniel Schubart, *Musikalische Rhapsodien*, vol. 3 (Stuttgart: Buchdruckerei der Herzoglichen Hohen Carlsschule, 1786), unpaginated.
13. <https://files.constantcontact.com/bc49f4a0101/62dfbc3bc3f4-4122-83e1-86bb1317cf70.pdf> (last tried July 2, 2026; no further information in Huber's book).
14. Stewart Pollens, *A History of Stringed Keyboard Instruments* (Cambridge: Cambridge University Press, 2022).
15. See "The Viennese harpsichord of the mdw," YouTube video, uploaded by the Institut für Alte Musik at the mdw, documenting the construction by Albrecht Czernin of a "hypothetical

harpichord as it might have been used at the Viennese court or in one of the important music chapels of the Austrian aristocracy in the second half of the 17th century," accessed July 2, 2026, <https://www.youtube.com/watch?v=eJqteKyen1c>.

16. Rupert Riedl, *Meine Sicht der Welt* (Vienna: Seifert, 2004).
17. For instance, Frieder Zaminer, "Musik im archaischen und klassischen Griechenland," in *Die Musik des Altertums*, ed. Albrecht Riethmüller and Frieder Zaminer, Neues Handbuch der Musikwissenschaft, vol. 1 (Series Editor Carl Dahlhaus) (Laaber: Laaber-Verlag, 1989), 113–206; and idem, "Harmonik und Musiktheorie im alten Griechenland," in *Vom Mythos zur Fachdisziplin: Antike und Byzanz*, ed. Konrad Volk et al., Geschichte der Musiktheorie, vol. 2 (Series Editors Thomas Ertelt, Heinz von Loesch, and Frieder Zaminer) (Darmstadt: Wissenschaftliche Buchgesellschaft, 2006), 47–256.
18. For instance, Joscelyn Godwin, "The Revival of Speculative Music," in *The Musical Quarterly* 68, no. 3 (July 1982): 373–389; and idem, "Introduction" in *Cosmic Music: Musical Keys to the Interpretation of Reality. Essays by Marius Schneider, Rudolf Haase, Hans Erhard Lauer*, ed. Joscelyn Godwin, trans Marton Radkai and Joscelyn Godwin (Rochester, Vermont: Inner Traditions, 1989), 7–30.
19. Hans Kayser, *Lehrbuch der Harmonik* (Zürich: Occident-Verlag, 1950); and idem, *Paestum. Die Nomoi der drei altgriechischen Tempel zu Paestum* (Heidelberg: L. Schneider, 1958).
20. Rudolf Haase, *Grundlagen der harmonikalen Symbolik* (München: Ora, 1966); and idem, *Der meßbare Einklang. Grundzüge einer empirischen Weltharmonik* (Stuttgart: Klett, Edition Alpha, 1976).
21. Hans Kayser, *Der hörende Mensch. Elemente eines akustischen Weltbildes* (Leipzig: Schneider, 1932).
22. Martin Schleske, *Der Klang. Vom unerhörten Sinn des Lebens. Mit Fotos von Donata Wenders* (München: Kösel, 2010).
23. Wolfgang Strohmayer, *Die hohe Kunst der Meister* (Zwettl: Edition Nordwald, 1996); idem, *Traditionelle Entwurfsgrundlagen in der Frühgeschichte der Tasteninstrumente* (Henndorf: Strohmayer [2000]); idem, *Geometrie der Kathedrale. Elementargrundlagen im Hoch- und Spätmittelalter* (Tellingstedt: Lohengrin-Verlag, 2002); idem, "Traditional Design Principles in the Early History of Keyboard Instruments, Parts I & II," *Clavichord International* 6, no. 1 (2002): 13–21; idem, "Traditional Design Principles in the Early History of Keyboard Instruments, Part III," *Clavichord International* 6, no. 2 (2002): 44–46; idem, *Zahlen – Gedanken der Engel* (Tellingstedt: Lohengrin-Verlag, 2003); idem, *Das Lehrwerk des Matthäus Roriczer* (Hürtgenwald: Pressler, 2004); idem, *Pyramide als Lehrbuch* ([Tellingstedt]: Lohengrin-Verlag, 2008); idem, *Matthäus Roriczer – Baukunst-Lehrbuch* (Hürtgenwald: Pressler, 2009); idem, *Arnault de Zwolle. Frühe Begegnung mit der universalen Lehre* (Tetenhusen: Lohengrin-Verlag, 2011); idem, *Geometrische Logik des Matthäus Roriczer* (Tetenhusen: Lohengrin-Verlag, 2013); idem, *Grundlagen einer Kunstlehre. Teil 1: Zur „Kunst der Geometrie“ von Matthäus Roriczer* (Tetenhusen: Lohengrin-Verlag, 2015); idem, *Grundlagen einer Kunstlehre. Teil 2: Zur Gestaltungskunst von Arnault de Zwolle* ([Salzburg:] Paracelsus Buchhandlung & Verlag, 2020); and idem, *Grundlagen einer Kunstlehre. Teil 3: Zur Auslegung der Tempelzahlen* ([Salzburg:] Paracelsus Buchhandlung & Verlag, 2022).
24. Hartmut Warm, *Die Signatur der Sphären. Von der Ordnung im Sonnensystem* (Hamburg: Keplerstern-Verlag 2001).

25. Frieder Zaminer (ed.), *Rezeption des Antiken Fachs im Mittelalter* (Darmstadt: Wiss. Buchges. 1990).