Martin KIRNBAUER
Schola Cantorum Basiliensis / FHNW, Basel

Carl Luython and the "Clavicymbalum Vniversale, seu perfectum": Finding its historical and musical context

With an appendix on "Vielhawer's tuning instruction" by Christopher STEMBRIDGE

Abstract

Since the description of a particular harpsichord with 19 keys per octave by Michael Praetorius in 1619, Carl Luython has been linked to this "Clavicymbalum Vniversale, seu perfectum", which is perfectly adapted for "Madrigalia in genere Chromatico". According to Praetorius, the harpsichord was built in Vienna and Luython owned it for some years before selling it off to today's Nysa (in Upper Silesia). The instrument, which attracted the attention of Praetorius, is by no means extraordinary (or esoteric), as a review of similar keyboard instruments with additional keys reveals. This article aims to put Luython's "Clavicymbalum Vniversale" into its historical and musical context, showing that a practical musical interest was the driving force behind its conception. The appendix describes the tuning instruction of the instrument, given by Urban Vielhawer in 1660.

Keywords: history of music; Bohemian Lands; Renaissance polyphony; Rudolf II; Luython, Carl; keyboard music; harpsichord; "clavicymbalum universale"; "Vieltönige Musik"; chromatic madrigal
Number of characters / words: 39 403 / 6 100
Number of figures / tables: 7 / 1
Number of music examples: 4
Secondary language(s): Latin; German

Nearly every entry in a musical dictionary mentions that Carl Luython owned a remarkable harpsichord with 19 keys per octave, the so-called "Clavicymbalum Vniversale, seu perfectum".[1] And most of the authors add with some regret that Luython's preserved music shows no special reference to the musical possibilities of this instrument (i.e. lacking chromaticism etc.).[2] This disappointment is perhaps unjustified, first of all because Luythons ownership of the famous harpsichord was in fact very short – he may have received it as a substitute of unsettled payments only after the dead of his patron, emperor Rudolf II) – and his preserved œuvre of instrumental music is small. But by putting the *Clavicymbalum Vniversale* into a historical and musical context my paper will show that the harpsichord is less spectacular as one might think and that yet music can be found which is conceived for this or a similar instrument.

* * *

Since the publication of the relevant documents by Adolf Koczirz in 1908, the story of the *Clavicymbalum Vniversale* and Carl Luython is quite well-known and has been told more than once.[3]

The first description of the instrument can be found in the second volume of the *Syntagma Musicum* by Michael Praetorius, *De Organographia*, published in 1619.[4] Praetorius reserved an entire chapter to describe an 'universal, or perfect, clavicymbal' (i.e. harpsichord): He explains that other keyboard instruments normally are 'somewhat imperfect' ("etwas imperfect seyn"), lacking the possibility of producing the "Genus Chromaticum". With this Praetorius is referring primarily to the limited number of keys (namely only twelve on an ordinary keyboard), offering merely a constricted selection of pitches, especially a few flats and sharps (and for example either e♭ or d♯, which represent in mean-tone temperament, the very common and widely circulated temperament at this time, an emphatic difference between the two versions of the same pitch reached by

[1] See for example Carmelo Peter COMBERIATI, 'Luython, Carl', in: *NGrove*[2] 15 (2001), pp. 393–395: 394; or Jozef ROBIJNS, 'Luython, Karel', in: *MGG* 8 (1960), col. 1351–1354: 1353–1354.

[2] *Ibid.*, col. 1353: "Seine Harmonieführung vermeidet chromatische Kühnheiten, was einigermaßen erstaunt, da sein 'archicembalo' Spezialtasten für Kreuz- und B-Töne besaß [...]"; or Vincent J. PANETTA, "Clavicymbalum (Universale)", in: Igor KIPNIS (ed.), *The Harpsichord and Clavichord: An Encyclopedia* (New York & London: Routledge, 2007), pp. 80–81: 80: "None of the surviving keyboard compositions of Carl Luython calls expressly for the capabilities of the clavicymbalum universal [...]."

[3] Adolf KOCZIRZ, 'Zur Geschichte des Luython'schen Klavizimbels', *Sammelbände der Internationalen Musikgesellschaft* 9 (1907/08), pp. 565–570; see also Christopher STEMBRIDGE, 'The "Cimbalo cromatico" and Other Italian Keyboard Instruments with Nineteen or More Divisions to the Octave', *Performance Practice Review* 6 (1993), pp. 33–59: 34–35 and 39–41.

[4] Michael PRAETORIUS, *Syntagmatis Musici Tomus Secundus. De Organographia* (Wolfenbüttel: Elias Holwein, 1619), pp. 63–66, https://digital.onb.ac.at/RepViewer/viewer.faces?doc=DTL_4675084.

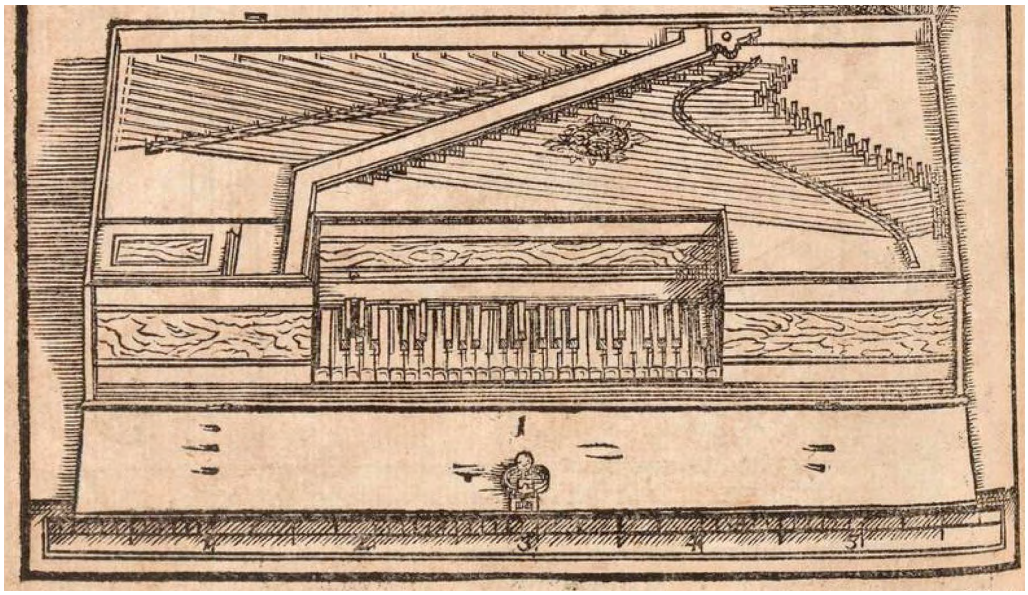


Fig. 1:
Michael Praetorius: *Theatrum Instrumentorum* (Wolfenbüttel: s. n., 1620), plate XIV (detail)

sharpening and flattening, respectively). Though some keyboard instruments were built with a few split keys (mainly for e♭ and d♯, as can be seen in the depiction of a Virginal in the accompanying woodcuts – ➢ Fig. 1),[5] he proposes additional split keys also for g♯ and a♭.[6] Then Praetorius turns to a long description of a harpsichord he has seen in the hand of "Her. Carl Luython / Röm. Käyserl. Majestät vornehmen Componisten vnd Organisten", built 30 years earlier in Vienna: According to this description it was strung with equal strings ("mit aequal Saitten bezogen")[7] and showed split keys not only to all 'Semitonia' (i.e. black upper keys), but also additional keys between the halve tone steps e-f and b-c, 'so, in the four octaves from C to c3, there was a total of seventy-seven keys' ("daß es also in den vier Octaven vom C biß c'''/ in alles 77. Claves gehabt hat").[8]

It is known that Praetorius travelled several times to Prague, where he must have met Luython and saw the *Clavicymbalum Vniversale* in the possession of Luython. Praetorius' patron, duke Heinrich Julius of Wolfenbüttel spent most of his time between 1611 until his death in 1613 as "obristen Director" of the Privy Council of Rudolf in Prague.[9] One stay of Praetorius in Prague is documented in late summer/autumn 1612, which would have been a perfect occasion to see the instrument then owned by Luython.

Praetorius must have found the instrument so exceptional that he spent nearly one and a halve pages to present three different display formats of the keyboard layout (by using the 'spelling' of the German organ tablature), and the notation of the available pitches on a stave (see below). Then Praetorius adds a short description of a particular transposing mechanism in seven halve tone steps ("Es kan aber dasselbige Clavicymbel oder Instrument sieben mal / als nemblich durch das c cis des d es dis biß ins e / vnd also vmb drey volle Tonos fortgerücket werden")[10] and he finishes his description with the praise of the unrivalled perfectness of this unique harpsichord:

[5] Michael PRAETORIUS, *Theatrum Instrumentorum* (Wolfenbüttel: s. n., 1620), plate XIV.

[6] Praetorius even asked a skilled maker to build him a clavichord with additional keys; PRAETORIUS, *De Organographia* (➢ note 4), pp. 61–62. Compare also his arguments for split keys in connection with transpositions in Michael PRAETORIUS, *Syntagmatis Musici Tomus Tertius* (Wolfenbüttel: Elias Holwein, 1619), pp. 81–82, https://digital.onb.ac.at/RepViewer/viewer.faces?doc=DTL_4676717.

[7] That means that it has one register at 8' pitch; the meaning of 'aequal' as 8' pitch is described by Praetorius on p. 127 in the context of organ pipes; see STEMBRIDGE, 'The "Cimbalo cromatico"' (➢ note 3), p. 39.

[8] PRAETORIUS, *De Organographia* (➢ note 4), p. 64; the English translation after Michael PRAETORIUS, *Syntagma Musicum II, De Organographia, Parts I and II*, translated and edited by David Z. CROOKES [= Early Music Series] (Oxford: Clarendon Press, 1986), p. 67.

[9] Siegfried VOGELSÄNGER, 'Warum reiste Michael Praetorius im Jahre 1612 mit der Wolfenbütteler Hofkapelle nach Prag?', *Braunschweigisches Jahrbuch* 86 (2005), pp. 167–169.

[10] Cf. STEMBRIDGE, 'The "Cimbalo cromatico"' (➢ note 3), pp. 39–40.

> "daß einem fast kein ander Instrument kan vorkommen / do man nicht mit diesem einstimmen köndte: Vnd dergestalt alle drey genera Modulandi, als Diatonicum, Chromaticum, vnd Enharmonicum, darauff observirt werden. Vnd were also dieses billich ein Instrumentum perfectum, si non perfectissimum zu nennen / weil dergleichen Variation durch alle Super- & Semitonia vff andern Instrumenten nicht zu finden."
>
> 'in such a way that one would find hardly any instrument [of fixed tuning] that could not play in tune with it; and therefore all the three genera of modulation – that is diatonic, chromatic, and enharmonic – are perfectly respected on it. For this reason it should be rather called a perfect instrument, if not the most perfect instrument, given that no other [keyboard] instrument has a similar possibility of passing through all the semitones and supersemitones.'[11]

Here Praetorius names at least three important keywords for the intended purpose of the *Clavicymbalum Vniversale*: tuning and temperament, pitch standards and transposition, and the "genera Modulandi, als Diatonicum, Chromaticum, vnd Enharmonicum".[12] In fact, this last wording refers two different aspects: 'modulandi' is referring to tonal modulation, and the 'genera' are pointing to the in 16th century practically rediscovered and vehemently discussed organisation of the 'tetrachord' in ancient Greek music – diatonic, chromatic and enharmonic –, using whole tones, 'diatonic' and 'chromatic' semitones and in the enharmonic genus two types of 'microintervals', a musical-practical rediscovery in the 16th century associated mainly with the activities of Nicola Vicentino (1510–1577).[13] The ancient Greek theory as well as its discussion in the Renaissance is fairly complex, but that is irrelevant for what follows; here what is important is the way Praetorius dealt with it.

At the same time, these keywords by Praetorius are the essential ingredients of what I call 'Vieltönige Musik': 'vieltönig' perhaps can be translated as 'multitonal' in the literal sense of using many pitches.[14] I introduced this term to refer to any pitch system (and music) with more than twelve real notes or pitches to the octave, regardless of its theoretical motivation. Although it does not correspond to any historical terminology any more than 'microtonal' does (used in the 20th century only), 'vieltönig' vividly captures the practical consequences of these systems.

The first ingredient that contributes to this 'Vieltönigkeit' is the very practice-oriented field of tunings and temperaments and hence with the precise allocation of notes and scales to fixed pitches; transposition and modulation also play a part, as does an interest in just intonation – the use of mostly untempered pure intervals. While this area has certainly been the subject of extensive theoretical reflection, it is firstly a practically relevant element of musical performance, one that can also have implications for composition.

The second ingredient of 'Vieltönigkeit' is the interest in ancient (above all Greek) music and music theory, with its so-called genera of the chromatic and the enharmonic, among others. This is structural in its effect, with immediate consequences for musical composition.

It should be noted that Praetorius is referring to both ingredients, linking them to the *Clavicymbalum Vniversale*. But before I come back to this, the second contemporary document on the *Clavicymbalum Vniversale* should be considered, also already published by Koczirz.

---

[11] PRAETORIUS, *De Organographia* (≺ note 4), p. 65; the English translation after Patrizio BARBIERI, *Enharmonic Instruments and Music 1470–1900. Revised and Translated Studies* [= Tastata, 2] (Latina: Levante, 2008), p. 304.

[12] Interestingly, exactly these keywords are also mentioned on the name board of the "Clavemusicum Omnitonum", a 31-note harpsichord by Vito Trasuntino from 1606, now in Museo internazionale e biblioteca della musica Bologna, Inv. 1766: "[...] Clavemusicum omnitonum / Modulis diatonicis, chromaticis et enharmonicis / A docta manu tactum [...]."

[13] Nicola VICENTINO, *L'antica mvsica ridotta alla moderna practica* (Rome: Antonio Barré, 1555); a digital edition of the treatise with translations and commentaries is being developed as part of the research project "Vicentino21" (SNSF project funding 100016_188922), 2020–2023; https://www.fhnw.ch/plattformen/vicentino21/.

[14] See Martin KIRNBAUER, '"Vieltönigkeit" instead of Microtonality. The Theory and Practice of Sixteenth- and Seventeenth-Century "Microtonal" Music', in: Paulo de ASSIS (ed.): *Experimental Affinities in Music* [= Orpheus Institute Series] (Leuven: Leuven University Press, 2015), pp. 64–90, also online: http://library.oapen.org/handle/20.500.12657/32935, esp. pp. 66–67; Martin KIRNBAUER, *Vieltönige Musik – Spielarten chromatischer und enharmonischer Musik in Rom in der ersten Hälfte des 17. Jahrhunderts* [= Schola Cantorum Basiliensis Scripta, 3] (Basel: Schwabe, 2013).

It is a 4-page report (divided in two parts) on this harpsichord written by Urban Vielhawer von Hohenau (1589–1665) in 1660,[15] who served from 1598 to 1612 as "Kapellknab" and later as a musician to emperor Rudolf II,[16] and from 1612 onwards as court organist to Archduke Carl, bishop of Breslau.[17] After the premature death of the Archduke in 1624 Urban Vielhawer stayed in the residence in Neisse (today's polish Nysa, nearby the present boarder to the Czech Republic), where he became mayor of the town.

From his report we learn some more details of the keyboard (e.g. that it was organised in 'yellow' and 'black' keys, i.e. presumably boxwood for the lower and dark stained wood for the upper keys), of the transposing mechanism and namely its relation to different pitch standards as "Chor, Cammer, Vndt ein Thon, piu alto"[18] and a very interesting tuning instruction, explaining step by step how to tune the strings (see the appendix by Christopher Stembridge).[19] This easily to realise tuning instruction contradicts the harsh commentary by August Wilhelm Ambros that 'it was the piano tuners' torture rack' ("es war die Folterbank der Klavierstimmer").[20]

But more interesting is the information by Vielhawer about the 'biography' of the instrument: He states that this unique harpsichord ("deß künstlichen Clauicimbel Welcher in gantz Europa nit ZůFinden") was invented and built during the lifetime of Luython ("vndt Bei Lebzeiten Ihr Kaÿs: Maÿst: Ferdinandi Primi, dero Cammer Organist N: N: ist erfunden, gemacht")[21] and that it was used in the "Cammer-Musica" of three successive emperors ("bey Ihr Kay. Maytt. in dero Cammer-Musica allezeit gebraucht worden, Alßo auch bey Ihr Kay. Maytt.: Maximiliani Secundi, vndt nachher bei Ihr Kayt. Maytt.: Rudolpho 2do ist gebraucht worden"), namely Ferdinand I (1503–1564), regnant from 1558 to 1564, Maximilian II (1527–1576), regnant from 1564 to 1576, and Rudolf II (1552–1612), regnant from 1578 to 1612. If this is true the instrument must have been built earlier than postulated by Praetorius, who says 'built 30 years earlier', i.e. in the late 1580s, namely before 1564, the death of Ferdinand I. And – also in contrast to Praetorius – Vielhawer does not say that the instrument was built or even invented in Vienna. This is in fact not very likely, as we will see. However, in the secondary literature one can find speculations about the Viennese 'inventors': Starting from Vielhawer's information that the instrument was made during the lifetime of Luython, already Koczirz named Jacques Buus (*c.* 1500–1565), who served as an organ player to emperor Ferdinand I and was beforehand organist at San Marco in Venice.[22] For the sake of completeness a certain and enigmatic 'Elsasz' should be mentioned, brought up in 1922 by Thorvald Kornerup without any proof and for which I can not find any documentation[23] – most likely an 'ignis fatuus'.

---

[15] A-Wös, Hofkammerarchiv, Niederösterreichische Herrschaftsakten W 61/A. 32, fols. 627r–630r (consisting of the original report on fols. 628r–629v and a later true copy on fols. 627rv and 630rv, serving as a wrapper). Cf. KOCZIRZ, 'Zur Geschichte des Luython'schen Klavizimbels' (≺ note 3), pp. 567–568.

[16] Cf. Michaela ŽÁČKOVÁ ROSSI, *The Musicians at the Court of Rudolf II. The Musical Entourage of Rudolf II (1576–1612) Reconstructed from the Imperial Accounting Ledgers* (Prague: KLP – Koniasch Latin Press, 2017, pp. 34, 178 ("Vilhauer, Urban").

[17] J. THAMM, 'Musik am Hofe des Bischofs Erzherzog Carl in Neisse', in: Alfons HAYDUK (ed.), *Schlesische Studien. Karl Schodrok zum 80. Geburtstag* [= Silesia, 7] (Munich: Delp, 1970), pp. 169–179: 174–175; Vielhauer Ahnenforschung, http://www.vielhauer-forschung.de/de_DE/forschung/oberschlesien/vielhauer-von-hohenhau.html.

[18] Cf. Bruce HAYNES, *A History of Performing Pitch: The Story of "A"* (Lanham, MD: Scarecrow Press, 2002), esp. pp. 102–103 (however, without mentioning this important source).

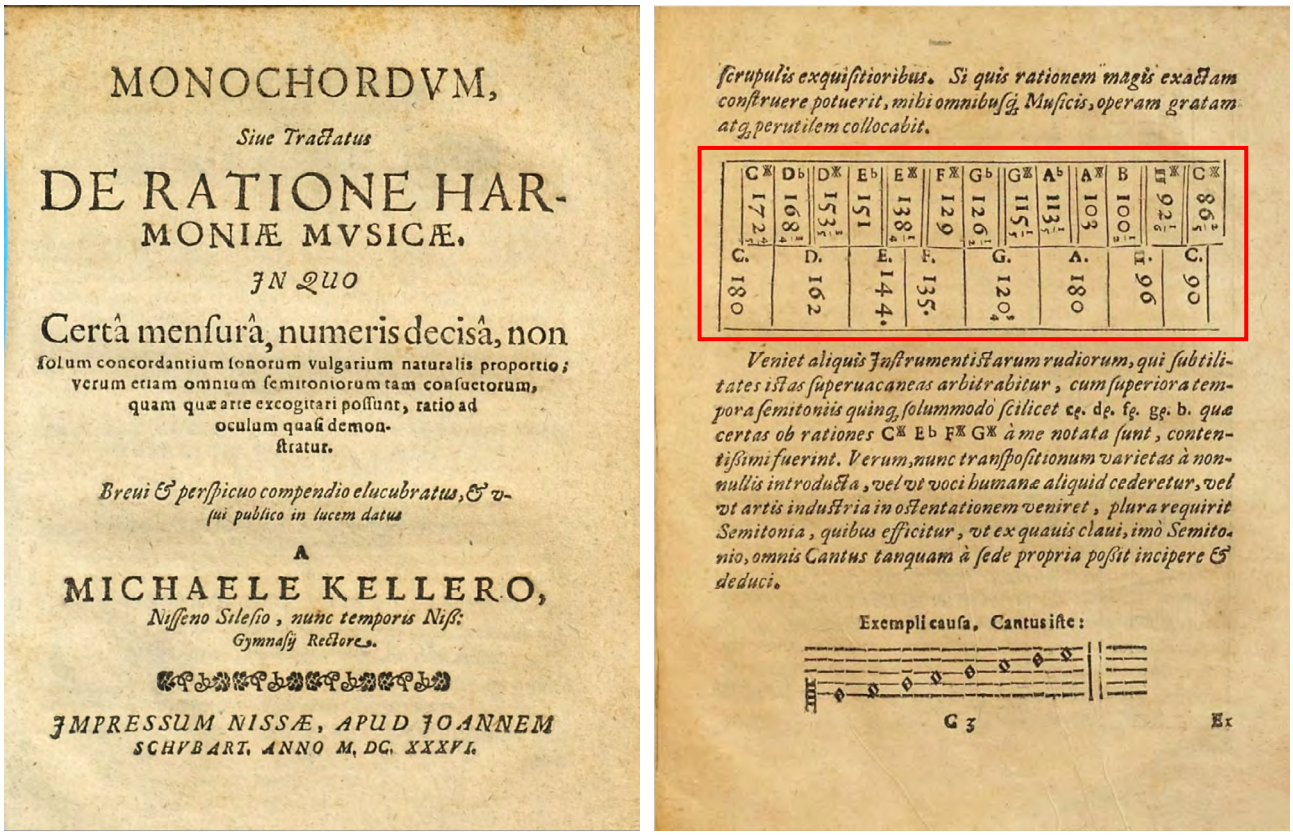
[19] Cf. also BARBIERI, *Enharmonic Instruments* (≺ note 11), pp. 303–305; unfortunately, there is a confusing misprint in the analysis on p. 305 and a misleading reference to Luythons "Fuga suavissima" in the footnote.

[20] August Wilhelm AMBROS, *Geschichte der Musik im Zeitalter der Renaissance von Palestrina an* [= Geschichte der Musik, 4] (Leipzig: Leuckart, 1878), p. 235.

[21] 'N: N:' can be interpreted as that the name is not known ('Nomen nescio') – what would make no sense in this context – or as 'Nomen negidius' or 'nominandum' (an abbreviation used in juristic documents for the respondent or defendant) – in view of the professional status as a mayor of Vielhawer it is likely that he used this formula for 'Carolo Luÿthon Cammer Orgenist' mentioned in the title of his 'Relation'.

[22] KOCZIRZ, 'Zur Geschichte des Luython'schen Klavizimbels' (≺ note 3), p. 569.

[23] BARBIERI, *Enharmonic Instruments* (≺ note 11), p. 303 n. 80, quoting Thorvald KORNERUP, *Akustische Gesetze für die Accord- und Skala-Bildung* (Kopenhagen: Jørgensen, 1930), p. 95; this puzzling reference to Elsasz can be found already in the first edition *Musical Acoustics Based on the Pure Third-System* (Kopenhagen etc.: Hansen & Christiania Norsk Musikforlag, 1922), col. 66 and 96.


MONOCHORDVM,

Siue Tractatus

DE RATIONE HARMONIÆ MVSICÆ.

IN QVO

Certâ mensurâ, numeris decisâ, non solum concordantium sonorum vulgarium naturalis proportio; verum etiam omnium semitoniorum tam consuetorum, quam quæ arte excogitari possunt, ratio ad oculum quasi demonstratur.

Breui & perspicuo compendio elucubratus, & vsui publico in lucem datus

A

MICHAELE KELLERO,

Nisseno Silesio, nunc temporis Niss. Gymnasij Rectore.

IMPRESSUM NISSÆ, APUD IOANNEM SCHVBART. ANNO M. DC. XXXVI.

scrupulis exquisitioribus. Si quis rationem magis exactam construere potuerit, mihi omnibusq; Musicis, operam gratam atq; perutilem collocabit.

Veniet aliquis Instrumentistarum rudiorum, qui subtilitates istas superuacaneas arbitrabitur, cum superiora tempora semitoniis quinq; solummodo scilicet cꝭ. dꝭ. fꝭ. gꝭ. b. quæ certas ob rationes C♯ E♭ F♯ G♯ à me notata sunt, contentissimi fuerint. Verum, nunc transpositionum varietas à nonnullis introducta, vel vt voci humanæ aliquid cederetur, vel vt artis industria in ostentationem veniret, plura requirit Semitonia, quibus efficitur, vt ex quauis claui, imò Semitonio, omnis Cantus tanquam à sede propria possit incipere & deduci.

Exempli causa, Cantus iste:

C 3 Ex

Fig. 2a-b:
Michael Keller: *Monochordum, sive Tractatus de ratione harmoniae musicae...* (Nysa: Joannes Schubart, 1636), title page and fol. C3r

Then Urban Vielhawer reports that Luython had bought the instrument, but sold it in 1613 to Archduke Carl, who transferred it to his residency in Neisse, where it was still kept by Vielhawer in 1660; in fact, the report of Vielhawer is nothing else than an attempt to interest the then reigning emperor, Leopold I, to recover the instrument and offering his services. And he mentions that Giovanni Valentini (1582/3–1649), at that time organist to the later emperor Ferdinand II, played the harpsichord during his visit in Neisse in 1617 and approved its uniqueness.[24]

This is all the evidence known so far for the *Clavicymbalum Vniversale*. However, further research could find traces left by the instrument in Prague and Neisse. Two starting points should be mentioned here as examples: Michael Keller published in 1636 in Neisse a treatise with the description of a keyboard with 19 keys per octave, which should above all allow transpositions in strange keys with many accidentals or the playing of corresponding music (➢ Fig. 2a-b).[25] It can be assumed that Keller's proposal was influenced by the presence of the *Clavicymbalum Vniversale* in the same town: Keller was the rector of the Gymnasium (classical secondary school) in Neisse and therefore as one of the notabilities in this city certainly acquainted with the mayor Vielhawer and the harpsichord kept by him.[26]

[24] KOCZIRZ, 'Zur Geschichte des Luython'schen Klavizimbels' (➢ note 3), p. 568; see also Hellmut FEDERHOFER, 'Graz Court Musicians and their Contributions to the "Parnassus Musicus Ferdinandaeus (1615)"', *Musica Disciplina* 9 (1955), pp. 167–244: 192.

[25] Michael KELLER, *Monochordum, sive Tractatus de ratione harmoniae musicae...* (Nysa: Joannes Schubart, 1636), https://books.google.co.uk/books?id=UdIIFEckSWUC&hl, fols. C2r-[C3v]: "Capvt VI. De Semitoniis tam vsitatis simplicibus, quam concisis." (with a sketch of the keyboard on fol. C3r). See also Franz Josef RATTE, *Die Temperatur der Clavierinstrumente: Quellenstudien zu den theoretischen Grundlagen und praktischen Anwendungen von der Antike bis ins 17. Jahrhundert* [= Veröffentlichungen der Orgelwissenschaftlichen Forschungsstelle im Musikwissenschaftlichen Seminar der Westfälischen Wilhelms-Universität Münster, 16] (Kassel etc.: Bärenreiter, 1991), p. 38; Werner BRAUN, *Deutsche Musiktheorie des 15. bis 17. Jahrhunderts*, II: *Von Calvisius bis Mattheson* [= Geschichte der Musiktheorie, 8/II] (Darmstadt: Wissenschaftliche Buchgesellschaft, 1994), pp. 55–57.

[26] Otto GIBEL mentions the instrument in his treatise *Propositiones mathematico-musicae* (Minden: Johann Ernst Heydorn, 1666), https://www.deutsche-digitale-bibliothek.de/item/ZU367HKJEWTY7R-U442PILI6ICL4R4YZK (cf. http://www.pieterbakker.eu/gibelius.pdf), pp. 37–38, but he apparently only knows about it through Praetorius; cf. Andreas WACZKAT, Elisa ERBE, Timo EVERS, Rhea RICHTER and Arne ZUR NIEDEN, "Heinrich Schütz und Otto Gibel", *Schütz-Jahrbuch* 33 (2011), pp. 119–128: 123.

To mention is also a keyboard instrument with 19 split keys which was kept around 1650 in the possession of the counts of Rosemberg, as revealed by a notice in the papers of the Spanish theologian and music theorist Juan Caramuel y Lobkowitz (1606–1682), who stayed between 1647 and 1654 in Prague and Vienna in the service of emperor Ferdinand III.[27] The layout of this instrument was with a double key for d certainly different and without further research the relation to the *Clavicymbalum Vniversale* remains mere speculation.

* * *

To sum up, the *Clavicymbalum Vniversale* was a harpsichord with 19 keys per octave (by altogether 4 octaves) with a mechanism for transposition at different pitch standards, built somewhere between the 1560s and 1580s, perhaps in Vienna or more probably elsewhere, used in the "Cammer-Musica" of three emperors between the 1560s until 1612 in Vienna and then in Prague, where it was owned – but perhaps only for a very short time – by Carl Luython, and then brought to the court of Archduke Carl in Neisse, where it was kept by a former court musician (Vielhawer) for the next 40 years, before the instrument disappears from notice. It seems noteworthy that the harpsichord was proved as musically useful and that it was used in musical performances.

But one detail mentioned in both accounts by Praetorius and Vielhawer is certainly not correct: the claim of the uniqueness of the instrument.[28] In fact, keyboard instruments with 19 keys per octave were known since the middle of the sixteenth century, called 'Cimbalo cromatico'.[29] Perhaps the first documented instrument of this kind up to now is a harpsicord depicted by Gioseffo Zarlino (1517–1590) in 1558, where he mentions also an instrument with 24 keys per octave, built for him already in 1548;[30] in a later document this instrument is called explicitly a "clauiciembalo cromatico".[31] But Zarlino's claim has to be regarded with some suspicion: Zarlino is hereby reacting to Nicola Vicentino, who introduced a very practical approach to integrate the antique genera (diatonic, chromatic and enharmonic) into musical practice already a few years earlier in 1555.[32] Especially the use of the enharmonic genus with its very small, 'microtonal' steps brought Vicentino to the construction of keyboard instruments with at least 36 keys per octave (the so-called *Archicembalo* and *Arciorgano*). But Zarlino, who is criticising Vicentino in nearly all concerns (although without naming him), is offering a much simpler and handy keyboard in meantone tuning, convenient for modulations

[27] Juan CARAMUEL, *Musica* (manuscript in I-VIGsa, Fondo Caramuel IV.6), Liber VI. Organicus, art. V, Nota III, § "De Rosembergii abaco" (I would like to thank Daniele Sabaino, who made his forthcoming critical edition of the treatise available to me); cf. also BARBIERI, *Enharmonic Instruments* (≺ note 11), p. 36 (with further references).

[28] With the possible exception of the transposition mechanism, which is only documented again in this context in the seventeenth century; see e.g. the instruments mentioned in Giuliana MONTANARI, 'Chromatic and transposing quilled keyboard instruments at the Florentine grand ducal court in the seventeenth century', *Recercare* 20 (2008), pp. 143–179. To my knowledge, there is only one record of such a mechanism from the sixteenth century, namely 1568 from Milan; see Carlo CHIESA, 'Milanese keyboard makers – 16th century', *FoMRHI Communication* 1231 (1994), pp. 79–81.

[29] See Christopher STEMBRIDGE, 'Music for the "Cimbalo cromatico" and Other Split-Keyed Instruments in Seventeenth-Century Italy', *Performance Practice Review* 5 (1992), pp. 5–43; STEMBRIDGE, 'The "Cimbalo cromatico"' (≺ note 3); Denzil WRAIGHT and Christopher STEMBRIDGE, 'Italian Split-Keyed Instruments with Fewer than Nineteen Divisions to the Octave', *Performance Practice Review* 7/2 (1994), pp. 150–181; Denzil WRAIGHT, 'The cimbalo cromatico', *Schweizer Jahrbuch für Musikwissenschaft* 22 (2002), pp. 105–136; Martin KIRNBAUER, 'Viele Tasten – viele Töne. Das Cimbalo cromatico und musikalische Praxis', in: Michael KUNKEL (ed.), *les espaces sonores. Stimmungen, Klanganalysen, spektrale Musiken* (Büdingen: Pfau, 2016), pp. 43–57.

[30] Gioseffo ZARLINO, *Le Istitvtioni harmoniche* (Venice: author, 1/1558), p. 141, https://gallica.bnf.fr/ark:/12148/bpt6k58227h#; cf. for a discussion STEMBRIDGE, 'The "Cimbalo cromatico"' (≺ note 3), pp. 44–54; WRAIGHT, 'The cimbalo cromatico' (≺ note 29), pp. 110–115; Rudolf RASCH, 'Why were enharmonic keyboard built?', *Schweizer Jahrbuch für Musikwissenschaft* 22 (2002), pp. 35–93: 44–53.

[31] Isabella PALUMBO FOSSATI, 'La casa veneziana di Gioseffo Zarlino nel testamento e nell'inventario dei beni del grande teorico musicale', *Nuovo Rivista Musicale Italiana* 20 (1986), pp. 633–649: 648 (facs.) and 640.

[32] On the competition between Vicentino and Zarlino cf. Michael FEND, *Gioseffo Zarlino, Theorie des Tonsystems – Das erste und zweite Buch der Istitutioni harmoniche (1573)* [= Europäische Hochschulschriften, Reihe XXXVI, Musikwissenschaft, 43] (Frankfurt/M. etc.: Lang, 1989), esp. pp. 397–398; and Karol BERGER, 'Concepts and Developments in Music History', in: James HAAR (ed.), *European Music 1520–1640* [= Studies in Medieval and Renaissance Music] (Woodbridge & Rochester, NY: The Boydell Press, 2006), pp. 304–328: 306–310.

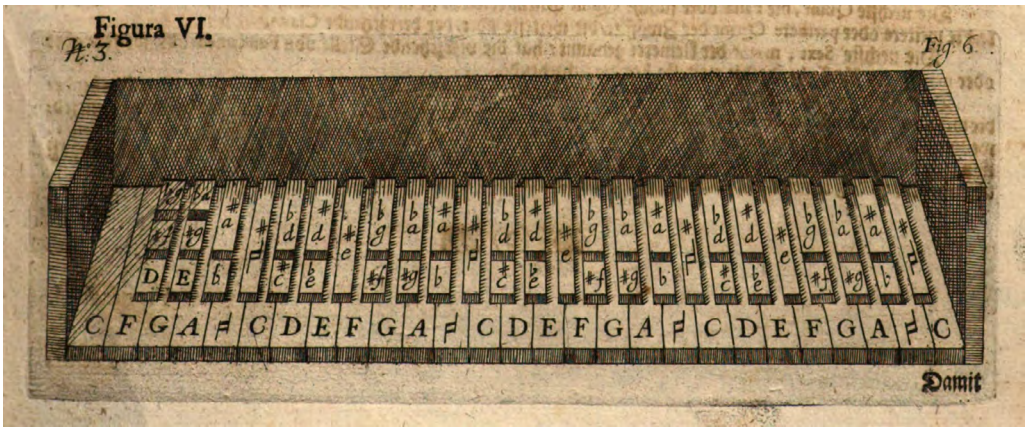


Fig. 3: **Johann Baptist Samber: *Manuductio ad organum* (Salzburg: Johann Baptist Mayrs seel. Wittib und Erb., 1704), p. 103 (detail)**

or transpositions and harmonisation ("il quale sarà commodo, & atto seruire alle modulationi, & harmonie di ciascuno delli nominati generi").[33] There is ample documentation of such *Cimbali cromatici* in the later sixteenth and seventeenth centuries, mostly but not exclusively in Italy – see e.g. the illustration of a "gebrochne Clavier" from Johann Baptist Samber, *Manuductio ad organum* (Salzburg 1704; ➢ Fig. 3).[34]

However, in our context the discussion of the antique genera in the 16th century is less important and we can concentrate on what Praetorius (and perhaps Luython) did understand by pointing to the "genera Modulandi, als Diatonicum, Chromaticum, vnd Enharmonicum". To make it easy, Praetorius uses the term "Claves cromaticæ oder die Semitonia" for the 'black' upper keys[35] – and consequently the split alternative keys as enharmonic. The practical consequences can be deduced from the lines written by Praetorius above the already mentioned chart of the available pitches of the *Clavicymbalum Vniversale* (➢ Fig. 4):

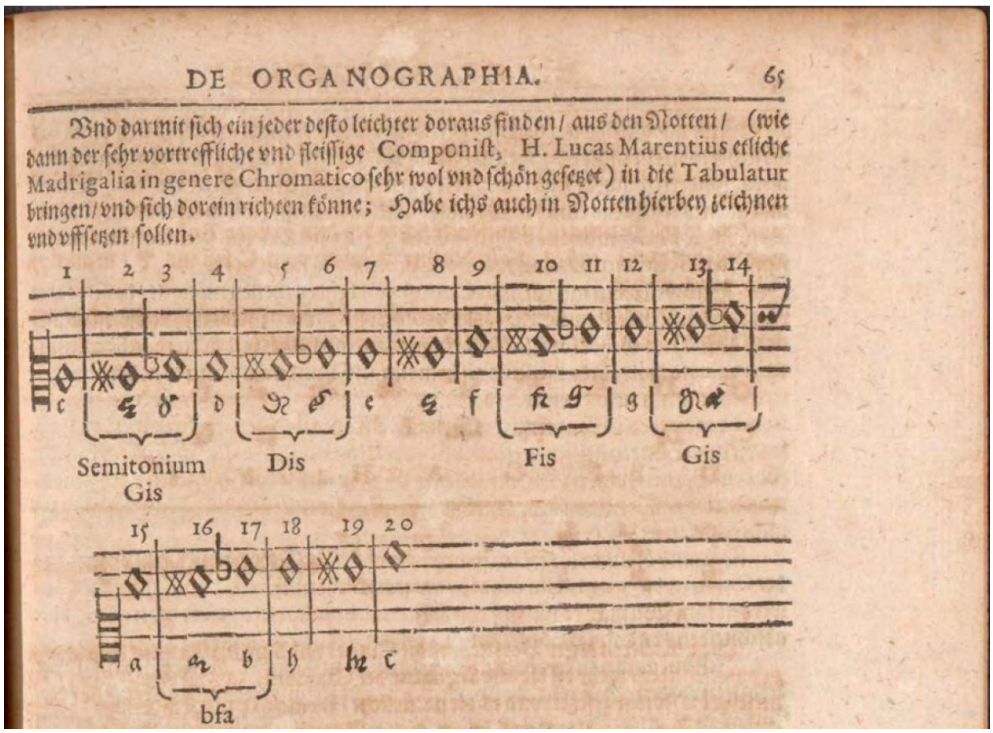


Fig. 4: **Michael Praetorius: *Syntagmatis Musici Tomus Secundus. De Organographia* (Wolfenbüttel: Elias Holwein, 1619), p. 65 (detail); note a misprint right at the beginning, where it should read "Semitonium Cis" (instead of 'Gis')**

> "Vnd darmit sich ein jeder desto leichter doraus finden / aus den Notten / (wie dann der sehr vortreffliche vnd fleissige Componist, H. Lucas Marentius etliche Madrigalia in genere Chromatico sehr wol vnd schön gesetzet) in die Tabulatur bringen / vnd sich dorein richten könne; [...]."

[33] ZARLINO, *Le Istitvtioni harmoniche* (➢ note 30), p. 140.

[34] Johann Baptist SAMBER, *Manuductio ad organum Das ist: Gründlich= und sichere Handleitung Durch die höchst-nothwendige Solmisation, Zu der Edlen Schlag=Kunst* (Salzburg: Johann Baptist Mayrs seel. Wittib und Erb., 1704), p. 103, https://www.digitale-sammlungen.de/en/view/bsb10990059.

[35] PRAETORIUS, *De Organographia* (➢ note 4), p. 91.

> 'It will be simpler for readers to understand this if it is shown in terms of notes on a stave (the famous composer, H. Lucas Marentius, has set out splendidly a number of madrigals in the chromatic genus in this way) so I include a chart of the pitches in musical notation.'[36]

Here Praetorius is explicitly referring to madrigals 'in genere Chromatico' by Luca Marenzio (1553–1599), using all kind of accidentals, what we call nowadays 'highly chromatic music'. And to play this music on a keyboard instrument or to support a vocal performance of this music, which is difficult to sing, he is recommending an instrument such as the *Clavicymbalum Vniversale*. This already reveals why no music by Luython adapted to this keyboard is preserved – simply because this may not have been the main purpose of such a *Cimbalo cromatico*.

There is, however, music explicitly written for a *Cimbalo cromatico*, documented almost exclusively in Italy (with music by Ascanio Mayone, Giovanni Maria Trabaci, Giovanni Del Buono, to which implicitly music by Domenico Mazzocchi, Galeazzo Sabbatini and Johann Jacob Froberger can be added).[37] But the main focus of these instruments was certainly on the accompaniment of 'vieltönige' vocal music (secular as well as sacred), without the restrictions of fixed pitches, compared to the 'freedom' in intonation of most melody instruments and the human voice. And these limitations were challenged mostly in the madrigal repertory. Praetorius for example is naming music, especially madrigals 'a little bit strange and difficult in intonation' ("im singen etwas frembd vnd schwehrlicher zu intoniren") by composers like Sigismondo d'India, Carlo Gesualdo, Luca Marenzio and Giovanni Gabrieli.[38]

But I would argue that there is more music to be found, which can be perhaps linked to the presence of the *Clavicymbalum Vniversale* in Vienna and Prague, if one were to look for it. To conclude I would like to present three different, but telling music examples from the South German sphere, which might in some way be related to the *Clavicymbalum Vniversale*, at least they are demanding a similar *Cimbalo cromatico*.

The first example can be found in the famous anthology of keyboard music from the 1630s, Vienna Minoritenkonvent XIV.714.[39] It is a curious or even bizarre "Fantasia per semiton[ia] Martini Coruini" (➢ Example 1a).[40] Even at first sight one wonders about the abundance of accidentals, the use of strange pitches like a♯ (beside b flat) and e♯ (beside f), all together 15 pitches per octave are used. In modern terminology the 'Fantasia' stands in 'B Major' and a simple transposition a semitone downwards would have avoided the trouble to notate all the accidentals (➢ Example 1b) – which is perhaps the very verbatim meaning of the title "Fantasia per semiton[ia]". It is therefore an example of the transposition into strange keys already mentioned, which caught the curiosity of the 'composer' or collector.

The second example is a "Sonata à 5" by the already mentioned Giovanni Valentini, who examined and played the *Clavicymbalum Vniversale* in 1617 in Neisse. It was published for the first time at the beginning of the last century under the modern title "Enharmonische Sonate",[41]

---

[36] PRAETORIUS, *De Organographia* (➢ note 4), p. 65; the English translation after CROOKES (ed.), *Syntagma Musicum II* (➢ note 8), p. 69.

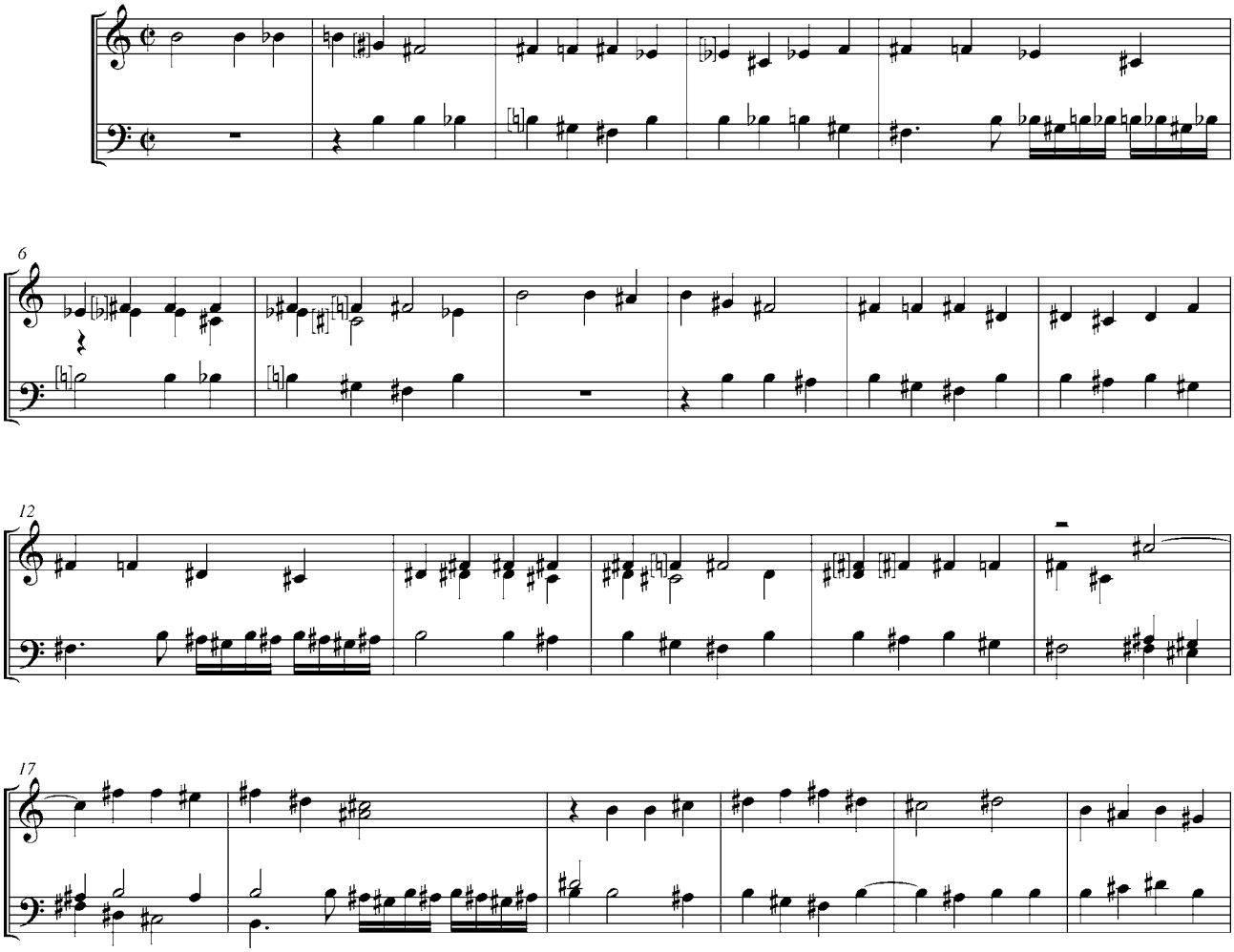
[37] See STEMBRIDGE, 'Music for the "Cimbalo cromatico"' (➢ note 3); KIRNBAUER, 'Viele Tasten – viele Töne' (➢ note 29); Martin KIRNBAUER, 'Der 'vieltönige' Froberger', in: Andreas VEJVAR and Markus GRASSL (eds.): *Avec discrétion. Rethinking Froberger* [= Wiener Veröffentlichungen zur Musikgeschichte, 14] (Vienna: Böhlau, 2018), pp. 289–299.

[38] PRAETORIUS, *Syntagmatis Musici Tomus Tertius* (➢ note 6), pp. 30–33: 33 (in the chapter VIII "Wie vnd wo das b. ♮ vnd ♯ recht zu gebrauchen sey."): "Wiewol solches nunmehr im Sigismundo de India, Principe de venosa, vnd anderer Madrigalien jetziger zeit mit sonderm fleiß/ auch im L. Marentio vnnd Iohan Gabriele gesetzt / zu befinden." It is little known, for example, that Gesualdo himself owned a 'Cimbalo cromatico'; see Martin KIRNBAUER: '"compiacimento di purgattissimo conoscimento" – Performing Gesualdo in Mid-Seventeenth Century Rome', in: Alberto GRANESE and Luigi SISTO (eds.), *Gesualdo e il suo tempo. Atti del Convegno Internazionale di Studi Gesualdo, Salerno, 16-17-18 dicembre 2013* [= Istituto Italiano di Studi Gesualdo, 1] (Avellino: Terebinto Edizioni, 2019), pp. 169–180: 177.

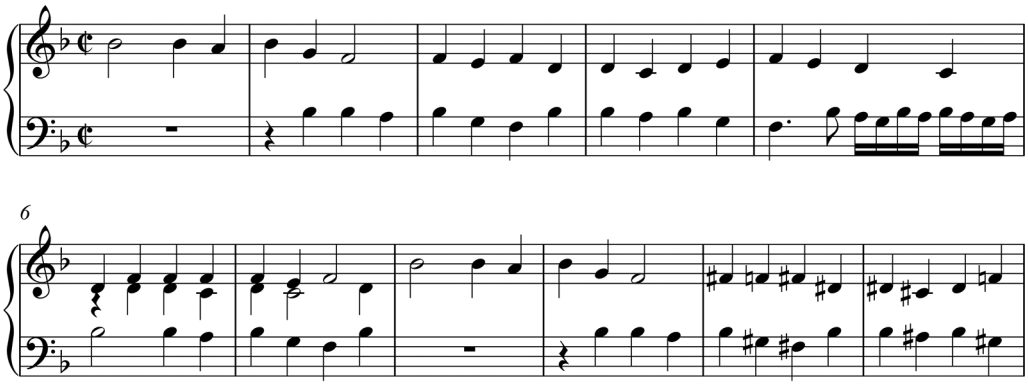
[39] I would like thank my colleague Jörg Andreas Bötticher, who shared this piece with me.

[40] A-Wm XIV.714, fols. 91^{r} + 90^{v}. For the context of this source see Markus GRASSL, 'Paralipomena zur Instrumentalmusik im Umkreis Rudolfs II.: Liberale Zanchi und seine Canzonen in A-Wm XIV.714', in: Julia BUNGARDT, Maria HELFGOTT, Eike RATHGEBER and Nikolaus URBANEK (eds.), *Wiener Musikgeschichte. Annäherungen – Analysen – Ausblicke. Festschrift für Hartmut Krones zum 65. Geburtstag* (Vienna etc.: Böhlau, 2009), pp. 67–86.

[41] Hugo RIEMANN (ed.), *Old Chamber Music (Alte Kammermusik). A Selection of Canzones, Sonatas, etc. (da chiesa and da camera) for strings alone, or with a thorough-bass, by Composer's of the 17th and 18th Centuries* [= Augener's Edition] (London: Augener, s. a. [1902]), booklet 3, pp. 103–107.



Example 1a-b: **"Fantasia per semiton[ia] Martini Coruini", A-Wm XIV.714, fols. 91r + 90v**
a) the beginning (bars 1-22)
b) transposed (bars 1-11)

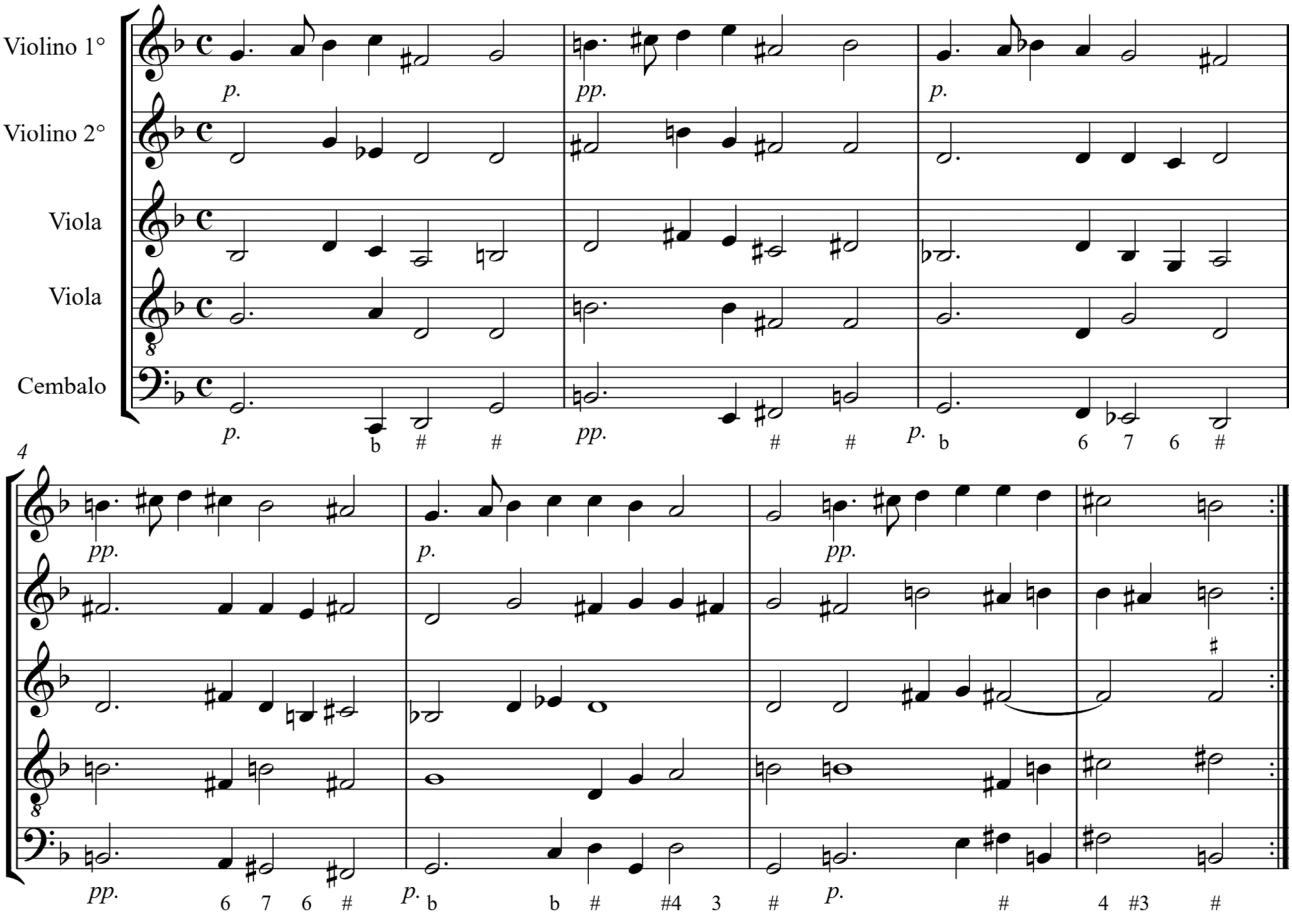


due to the very short subject 'in G minor' which is immediately repeated 'in B minor', using the tiny 'microtonal' differences between the juxtaposed b♭-a♯ and e♭-d♯ (➢ Example 2).[42] It should be mentioned that all these pitches are written out in the upper voices (for string instruments) and indirectly indicated in the figured bass.[43] It should be noted that more music of this kind, not only by Valentini, but also by his pupil, emperor Ferdinand III, can be found.[44]

[42] "Sonata à 5", D-Kl 2° Ms. Mus. 60 r; cf. BARBIERI, *Enharmonic Instruments* (➢ note 11), p. 140; Bernd ASMUS, Claus-Steffen MAHNKOPF and Johannes MENKE, *Schlüsselwerke der Musik* (Hofheim am Taunus: Wolke, 2019), p. 59.

[43] A correspondingly performed recording can be found on the CD by Vera Schnider and the ensemble "Das kleine Kollektiv", *Un'Arpa straordinaria. Italienische Musik des 17. Jahrhunderts für Arpa Doppia* (Ars Production 2020, ARS 38 568), track no. 13.

[44] See e.g. KIRNBAUER, *Vieltönige Musik* (➢ note 14), pp. 211–212; Steven SAUNDERS, *Cross, Sword,*



Example 2:
Giovanni Valentini: "Sonata à 5", D-Kl 2° Ms. Mus. 60 r, the beginning (bars 1-7)

The third and last example brings us back to Prague: The famous violin sonata by Georg Muffat (1653–1704) is on it's only manuscript dated "Pragae 2 Julij 1677".[45] Here, in total, seventeen pitches per octave are used within the composition, as a result of its far-reaching modulations (➢ Fig. 5a-b). A spectacular effect is produced by the direct juxtaposition of e♯ and f (b. 118), a♯ and b (b. 123–124), and b♯ and c (b. 129–130).[46] In the light of this passage, these pitches demand to be taken seriously as part of a 'vieltönige' performance practice – not only in the violin part but also in the accompaniment of the basso continuo, which would have been a *Cimbalo cromatico* or the *Clavicymbalum Vniversale*.

These examples make it clear that the *Clavicymbalum Vniversale* was special, but not at all an unique curiosity – and that there is literally unheard music to be discovered, written for this musical instrument or requiring such 'vieltönige' musical instruments for performance.

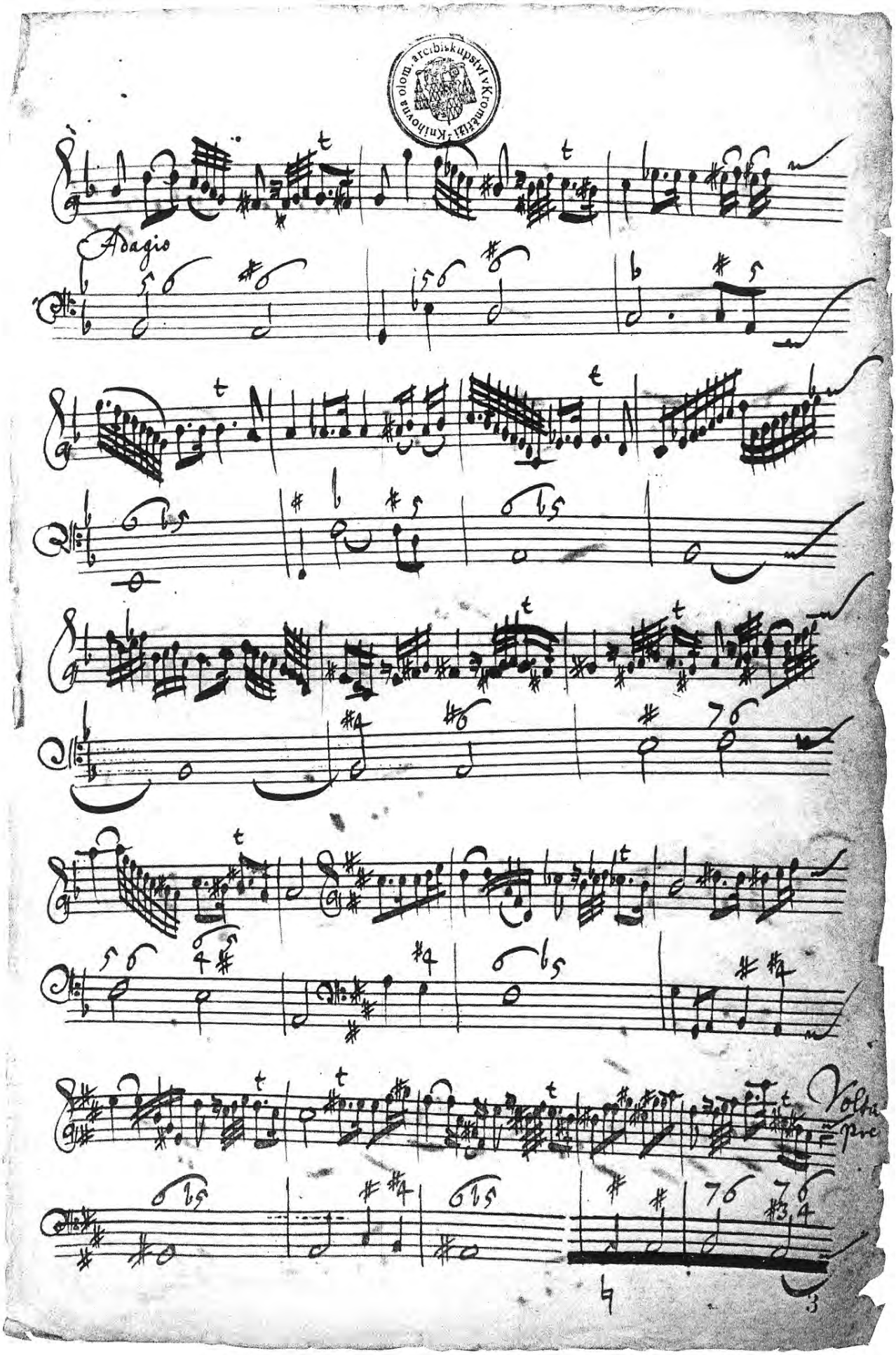
and Lyre. Sacred Music at the Imperial Court of Ferdinand II of Habsburg (1619–1637) (Oxford: Clarendon, 1995), esp. pp. 97–98.

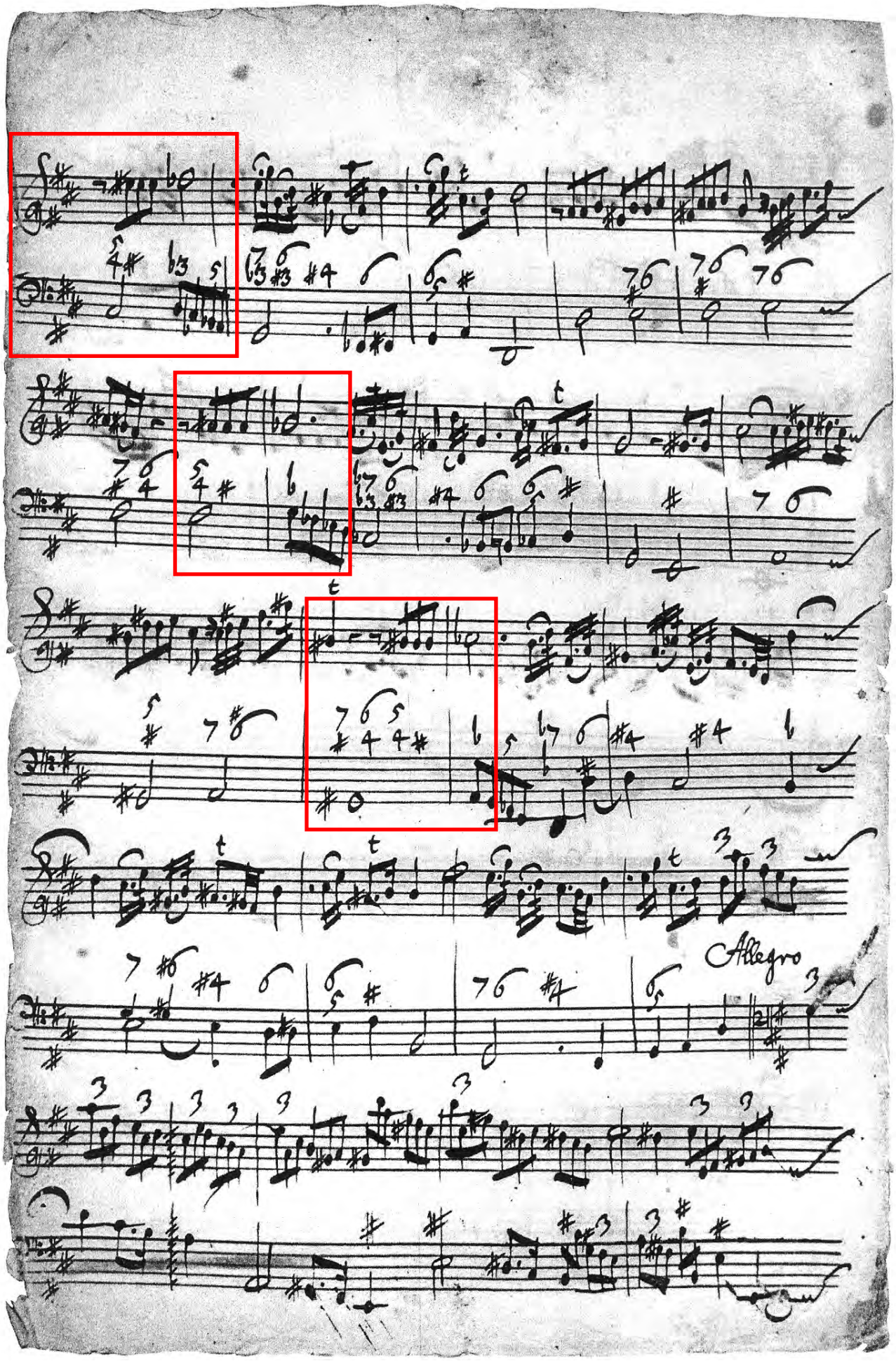
[45] "Sonata Violino solo", CZ-KR sign. B IV 118; cf. KIRNBAUER, '"Vieltönigkeit" instead of Microtonality', pp. 87–88. An appropriate recording by Eva Saladin (violin) and Johannes Keller (cimbalo cromatico) can be seen at the Youtube channel of "Studio31": https://www.youtube.com/watch?v=G583ZJ1Psdk (the 'Adagio' is at 5'15 to 8'50, the relevant passage at 7'10 to 8'30).

[46] Folio 3^{v}, first bar of the first staff (b. 118), first and second bar in the second staff (b. 123–124), and second and third bar in the third staff (b. 129–130).

▶▶▶

Fig 5a-b:
Georg Muffat: "Sonata Violino solo", CZ-KR sign. B IV 118, fol. 3^{r-v} (from the second 'Adagio')





APPENDIX

Christopher STEMBRIDGE: Vielhawer's tuning instruction

The instrument described by Praetorius was clearly not intended to be tuned to ETS 19. Patrizio Barbieri's reasoning in his book *Enharmonic Instruments and Music* (pp. 304–305) seems to be based on an error in Koczirz's transcription of tuning instructions for the same instrument but a glance at the original document makes it clear that the instrument is to be tuned in an extended mean-tone temperament.[47] The tuning procedure is described in Vielhawer's original report:

Vielhawer first gives the 7 positions of the keyboard:

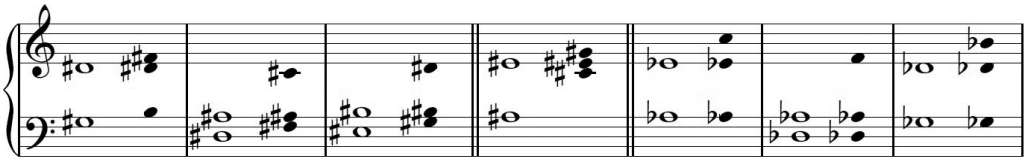
> "Welcher kunstreicher Flügel /: oder Clauicimbel :/ Bestehet in 7 Semithon, darunter 3 gantze Ton, alß Chor, Cammer, Vndt ein Thon, piu alto Zůgebrauchen Vndt Zuziehen ist, wie folget Zusehen.
> 1.° Jm untersten ist der Chorthon Zugebrauchen.
> 2.° } diese Zweÿ seindt Semithon
> 3.° }
> [4.]° darnach ist der Cammerthon Zu Zihen vndt Zugebrauch[en]
> 5.° } diese Zweÿ seindt auch Semithon
> 6.° }
> 7.° Jst ein Thon höher alß Cammerthon Zuzihen."

This means, if you move the keyboard from 1 to 4 or 7 the intervals are all in tune – this is quite logical since c-c♯-d♭-d move up (from position 1 to 4) to what was tuned as d-d♯-e♭-e and so on [except e♯ and b♯ which would in fact need adjustment] whereas, if you move it to position 2., 3., 5. or 6. you will need to retune all the semitones.

Then, above a 2-stave system he writes:

> "Wann man die Semithon Züg gebrauchen wiel, seindt dieße nur Zu stimmen."

The left margin of Vielhawer's original 2-stave system is damaged, missing the clefs which obviously must have been c1 (upper) and f4 (lower). The tuning instructions that follow – as well as the explanation given above – make it however abundantly clear that the notes are these (here transcribed into modern clefs, the notated ♮b in 'bar' 3 is changed into b♯):[48]



Below the 2-stave system is written:

> "[Auf] die gestimbte b mollen Kommen die diesis.
> [vnd]t Rectificirt man mit den untern Vndt obern Terzen.
> Auf die gestimbte diesis kommen b mollen
> Vndt rectificirt man mit den vntern Vndt obern Terzen.
> 4 bmollen d˙ / b / f˙ / c˙ / 3 die.[sis] als gis cis fis."

This is slightly confusing. What Vielhawer can only mean is:

> 'Above (behind) the tuned flats there are 4 extra sharps [= d♯, a♯, e♯, b♯ (though of course the e♯ and b♯ keys have no keys for flat notes in front of them)]
> They are rectified against their lower major thirds [i.e.: b, f♯, c♯, g♯]
> Above (behind) the tuned sharps there are 3 flats [= a♭, d♭, g♭]
> They are rectified against their upper major thirds [i.e. c, f, b♭]'

The double bar-lines in the 2-stave system are thus in the original and obviously indicate Vielhawer's recognition of his mistake: the fourth bar showing the step of tuning e♯ to a♯ must clearly precede the third bar (tuning b♯ to e♯). The text explains that the normal flats

[47] KOCZIRZ, 'Zur Geschichte des Luython'schen Klavizimbels' (≺ note 3), p. 567. Vielhawer's manuscript is now in the Österreichisches Staatsarchiv (Hofkammerarchiv) in Vienna, where it is filed under Niederösterreichische Herrschaftsakten W 6I/A. 32, fols. 628r–629v.

[48] In the context there is no doubt to which key it refers; the note is b*mi* and not b*fa*.

and sharps (b and e flat, f, c and g sharp) are used to tune the other notes found behind them. You tune the fifth and check the note as the upper or lower note of the major third of the triad. In the following list, these tuning steps are in the corrected order originally intended by Vielhawer:

White notation	Black notation
g♯/d♯′	b/d♯′/f♯′
d♯/a♯	f♯/a♯/c♯′
a♯/e♯′	c♯′/e♯′/g♯′
e♯/b♯	g♯/b♯/d♯′
a♭/e♭′	a♭/e♭′/c″
d♭/a♭	d♭/a♭/f′
g♭/d♭′	g♭/d♭′/b♭′