

Harpsichord - a Mother of Necessity?

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"To the true artist the world is a harpsichord." (Flaubert in a letter to Ernest Chevalier 1841)

Timely and Timeless

The harpsichord has a clear advantage to all the electronic instruments of today: it will not get outdated. While the piano and all the instruments of the modern orchestra have been "upgraded" to respond to the needs of the music of the post-romantic era, the "queen of instruments" was clever enough to go to sleep for a century, and - after a short odyssey in some piano factories - is again built along the ideals of the 18th century. So far, the harpsichord has made no sacrifice on the altar of primitive power and violence. And, after all, why bother? Do we not all prefer to be moved to be surprised?

In fact, the harpsichord was only pretending to sleep. Most of Beethoven's *Piano Sonatas* and even Liszt's *Tre Sonetti del Petrarca* (1846!) were still published "for harpsichord or pianoforte". Ignaz Moscheles gave harpsichord concerts until 1840's and other keyboard players continued this activity. Throughout the nineteenth century the harpsichord remained a household instrument, and it seems that, although the interest in harpsichord remained (when A. J. Hipkins gave a harpsichord concert in 1886, his page turner was Anton Rubinstein!), the shortage of instruments must have been a problem (in early 19th century France, harpsichords served for firewood, to warm up the classrooms in Conservatories).

But what is it that makes the harpsichord so unique that no "revision" seems to be needed? Could the reason simply be the longing for those halcyon days when there no continuous background noise was heard and we all belonged to the nobility (obviously, as otherwise we had had little chance to listen to Couperin performing on the harpsichord)? A thought hardly worthy of our creative minds.

Or is it the inimitable sound of a plucked string, the miniature of the expanding universe: excited silence, a tiny noise of friction anticipating the Small Bang, strings vibrating in all harmonies of the spheres, until the resonance of the instrument dies out and the silence restarts.

A fascinating thought, but while the harpsichord indeed seems to have the richest spectrum of any acoustic instrument, it is nevertheless not a sufficient reason. The total musical experience is a much more complicated and subtle event than just experiencing sound. The space, the situation, the audience with all its earlier knowledge and experiences and expectations of the performer, the instrument and its traditional repertoire, create the "aura" of the instrument, and this for a great part determines how any new musical event is received and experienced.

It is this aura the composers write for.

Listening - The Aura

And yet, it *is* somewhat surprising that the vanguard composers of our time are so inspired to write new works for the harpsichord. Are not the sounds it produces quiet and of short duration, possibilities of vibrato and bending totally missing, its dynamic features and timbre possibilities insignificant? All this in a period that seems to love the extremes in everything!

We could actually claim harpsichord to be "popular" among contemporary composers. Thousands of composers of our time, including most of the greatest names, have written for harpsichord. *Despite* the lack of all dynamic and timbre changing possibilities? Or is it *because*? For the challenge of the extreme, for the need to attain maximal expression with minimal means, that the harpsichord has become a source of inspiration to so many composers?

Today, electronic music is everywhere. Personally, I am very happy of that. New means mean new richness: use of tapes, samplers, and other interactive electronic instruments or computer-systems are wonderful additions to the diversity of musical expression. Paradoxically, although it may seem that an ancient acoustic instrument can hardly compete with the new electronic instruments with their seemingly endless possibilities, while the synthesizer factories keep adding novelties to their instruments, the number of harpsichord players just keeps increasing. And composers prefer to writing for the harpsichord to writing for a synthesizer.

The property of the electronic instrument that defies all physicality is also a handicap. The expressive quality of the sound caused by the physical resistance is included as a natural blessing in an acoustic instrument. The player of an electronic instrument still has a long way to go to get anywhere near such intensity. Besides, a real musical performance is less based on effects than on the artist's ability to create illusions. It all really happens in the listener's mind. The artist is mainly giving impulses; the audience has to complete the picture. A good harpsichordist

can always create the necessary illusions of dynamic variation, sustained sounds, and color changes when the occasion demands. Therefore, the most decisive influence on the birth of new repertoire is the devoted virtuoso who is able to squeeze out of a composition more than even the composer himself could have hoped for. One Heinz Holliger inspires composers more than a whole oboe factory.

In the last decades the players and harpsichord makers, and finally composers, too, have turned their backs to the so-called "modern harpsichord" (also called "monster") in favor of the "baroque harpsichord" (also called "copy"). Most composers even prefer that their earlier "monster" pieces would be adapted to a "copy". The modern harpsichord, an innovation of our century, has, paradoxically, become a museum piece. A great pity, as with its extinction some masterpieces of contemporary harpsichord repertoire, such as Xenakis' *Khoai* or Sciarrino's *De o de do*, which simply cannot be played on any other instrument, have become endangered species, soon to be heard only in selected museums.

Playing - The Repertoire

"Why do you play *contemporary* music on the harpsichord?" This innocent question, so typical of our time, was never presented to Bach, Couperin, Mozart, or Beethoven. They all wrote and played exclusively *contemporary* music of *their* time. If we today want to understand their music, we have to do the same: first establish a living, interactive relationship to the music of our *own* time. Only then can we hope to understand what a living thing, not a relic, the music always was for the past generations – and should be for us. The music that is born of the time we live in is simply the most directly speaking and the most important for us. Denying one's own time and escaping to the past is self-deception. While we admire the ancient masters, we have to accept that even their genius cannot act as a substitute for the present.

In addition, in any music of any time the interpreter has to be creative, too. When interpretation gets established, music - be it historical or contemporary - dies. The traditional notation was originally conceived to be a mere memory-aid for music that the reader already knew. It never did represent the sounding result. Therefore a note never tells the exact pitch (dependable on tuning, pitch level, scordaturas, transpositions etc.), duration (dependable on tempo, articulation, rhythmic conventions etc.), dynamics, color or, in fact, any auditory phenomenon. Rather, the traditional notation symbols refer to actions to be taken (like which keys should be pressed down, etc.). This can be enhanced to contain visual or verbal information on composer's expectations of the performer's contribution to the piece in form of "creative ornamentation" (also misleadingly called improvisation by some people). When e.g. Beethoven played his piano concertos, in his music, the page-turner saw "nothing but...a few Egyptian hieroglyphs wholly unintelligible to me scribbled down to serve as clues to him". Why indeed write down something you would play differently in each performance anyway?

But how many of today's great performers could really improvise even a short cadenza to a Mozart Concerto? Do we dare to think what would happen if they were required to improvise a cadenza to a new concerto? Lack of courage or lack of creativity? Not good for a musician. Although the improvisation might not be better than the composer's own, written-out and well thought-of version, it would nevertheless be something unique. In any classical concerto, always indulge yourself with improvised cadenzas! This way the concert can have surprises for you, too.

Are not lack of courage and curiosity, i.e. lack of creativity, the very obstacles that prevent most musicians - including harpsichordists – from touching the repertoire of their own time? It is not a matter of taste. It is morally wrong to the audience to deprive them of their rights to staying in touch with the music of their own time. The audience can not define what music should be played and how. Composers and performers make the music and their task is not to fulfill, but to surpass the expectations of the audience.

Composing – The Challenge

Composing for the harpsichord - like for any instrument - is composing not so much for the **instrument**, the technical device, as for the **relationship** between the instrument and its player, for the tradition, the culture, the aura of that instrument. It should also aim at the renewal of that tradition, that relationship, that inner world where the musical expression is born. A strong resistance, the faithful companion of any new art, is naturally to be expected. If in their time Brahms' symphonies were regarded as "mathematical music evolved with difficulty from an unimaginative brain", and "the entire works of Chopin present a motley surface of ranting hyperbole and excruciating cacophony" and Beethoven was mainly "adding melodic ugliness to harmonic ugliness", we shouldn't forget that already Aristophanes was upset by the musicians of the younger generation, who "try one novelty after another" and create "a mixture of incongruous melodies without rhythm or any semblance of sanity". Speaking of the halcyon days...

If all those novelties were tried out over two thousand years ago, what use could we today have for an old harpsichord? First, of course, there is a totally new harmonic-melodic-structural musical language, a reflection of *our* time, to be used. Moreover, to upset some late-born aristophaneses of our time, you might set up the harpsichord in a new, unheard-of context - in combination with modern instruments or electroacoustic devices, for example, or vary its timbre by such mechanical means as "preparation", using different materials for the plectra or playing

directly on the strings – or concentrating on everything *but* the strings in the performance! But there is also an ancient, simple means of expression, which has been greatly neglected in our century: the tuning.

Tuning

Be it because of the richness of its harmonic spectrum or whatever, the harpsichord just doesn't sound acceptable in equal temperament. Therefore - unless the equal temperament is especially asked for, like if the harpsichord has to be in tune with an equally tempered piano or tape - I prefer to use other tuning systems even when playing contemporary music. I would actually discourage the use of equal temperament in almost any music. Fortunately, all professional harpsichordists can tune their instruments themselves and are familiar with non-tempered tunings. Thus, all kind of tunings can be called for by the composer.

We hear micro-intervals in most contemporary music, and more often than not, they *are* intentional. Nevertheless, really profiting of the enormous possibilities of different tuning *systems* is still rare. This is another sad case where raw power has rolled over the expressive language of nuances. It is not surprising that the ancient Chinese, after having experimented with equal temperament, decided to discard it as unexpressive. Hardly any musical phenomenon affects the listener as strongly as small pitch deviations. Most sophisticated musical cultures rely on it.

Until the 19th century, tuning systems were an integral part of western music, too. In late Byzantine music, the octave was divided into as many as 78 intervals, and at the turn of the 17th century, microtonal systems for harpsichords and organs with up to 36 keys per octave were used. What an exciting course the western music would have taken, had the simplicity and practicality of tonality not helped it to have been elected *the* language of the following centuries. It is about time we reconquer this lost paradise, this fascinating universe hidden inside a semitone.

There is nothing artificial in micro-intervals. On the contrary, they can be regarded as a real benefit of nature: if an instrument is tuned in perfect intervals, micro-intervals of different sizes automatically emerge.

"Different size" is the magic word. It is naturally possible to divide an octave in as many equal parts as you like - the parts are still equal, all intervals are tempered, none is perfect. It is much more interesting to use perfect intervals and take advantage of the microtones, which are the natural consequence of combining perfect intervals. Tune e.g. three perfect major thirds: C-E-G#-B#. The interval C-B# is ca. 1/5-tone smaller than the octave C-C. Yet, all thirds are perfect. Tune four perfect fifths C-G-D-A-E and the resulting (Pythagorean) third C-E is ca. 1/9-tone wider than the perfect third. Yet, all fifths are perfect. Using this simple natural law, many exciting tuning systems can be created. (For an example, see Appendix.)

The perfect intervals, in their innocent purity, ensure that the ear does not interpret the micro-intervals just as more or less intentional deviations of the "correct" half-steps, but as independent pitches of their own right. In our time, when practically any synthesizer may contain a whole library of different tuning systems just begging to be used, it is hard to understand why so few composers take advantage of it. I want to believe, though, that with the current trend of "neo-colonialism" - the use of exotic scales and means of expression embedded in the western musical language - the interest in micro-tonality will also increase.

Is it not like we were reliving the late 16th century? Just as then, a new musical language has to be created. And again, we are not suffering of any shortage of possibilities.

Visions of pragmatism

With all kind of new possibilities (including a totally new harpsichord) in mind, and without any intention to restrain anybody's zeal, it might not hurt to think occasionally of the poor harpsichord player in his ardor to accomplish the cosmic expectations of the composer. So let's put down some crude facts and pragmatic thoughts on the harpsichord playing for potential composers (may they multiply and plenish the earth):

- The harpsichord is a plucked string instrument. Like a huge lute with a keyboard but without dynamics. I.e. it is useless to write dynamic markings, accents &c., because all dynamics are already "built in" in the musical texture. For "forte", you simply write more notes: thicker chords or faster movement, tremolos, trills. Consequently, a repetition, trill, or tremolo can never be played *pp*, and they will practically always cover a simultaneous melodic line. Also, following the laws of physics, the sound usually gets louder when moving toward the low register. To make things a little more complicated, traditional harpsichordists, like organists, are accustomed to express "dynamics" by timing (i.e. by "rhythmical conventions"), repetitions, or ornamentation. Micro-timing, the temporal play with the ever-changing expectations of the listeners, is really the marrow of all harpsichord playing. "You only need to know when to press a key down and when to release it", said Johann Sebastian Bach.
- Unlike with "Steinways", there is no real "standard harpsichord". The largest (baroque) harpsichords have two keyboards and the maximum range of five octaves from F1 (the F below the low C of the cello) to f³. Very few have ranges G1-g⁶ and even fewer F1-g⁶. Smaller ranges like G1-d⁶ and A1-d⁶ are quite common. Most

harpichord works by J. S. Bach, including the Well-Tempered Clavier, compass only four octaves, C-c³! Avoiding the extremes where possible might increase the frequency of performances of your masterpiece.

- It is rare to have more than two 8' stops and one 4' stop (sounding an octave higher than written) on a (baroque) harpsichord. One 8' stop on the upper manual and the other 8' and the 4' on the lower manual. The manuals can usually be coupled, so that you can play all stops ("tutti") simultaneously on the lower manual. If there is a so-called harp (lute) stop, where strings are damped close to the bridge, it is usually on the upper manual, but don't count on it. The best would be to leave as much as reasonable to be decided by the performer – the specialist.
- Harpsichord speaks rather fast, but - as with most non-percussive instruments - the sound needs some time to fully develop, to reach the "flower". Thus, very short chords or fast repetitions especially in higher register tend to contain more noise than tone. This is particularly true with the 4' stop, the softest stop on a harpsichord. Ligeti used it consciously in his famous *Continuum* to make an extremely fast repetition on the top e³ of the 4' stop create a "continuum" from tone to noise.
- Harpsichord's mechanism being very light, melodic figuration and broken chords can be played extremely fast (but consequently "as fast as possible" on the harpsichord easily becomes "faster than anybody can hear"). On the other hand, the lightness also makes the harpsichord more sensitive to mistakes than e.g. piano. Sometimes nothing more than a brush of a feather is needed to bring forth the full sound. If you avoid large stretches and consecutive chords in rapid succession, you are rewarded by the player's temporal gratitude. Chord repetitions of up to 9 times per second should be OK, though, at least for a short duration.
- As harpsichords do not have sustaining pedals, the notes are supposed to clearly indicate the exact durations of individual tones. Where "laissez vibrer" is called for, the maximum durations of notes will depend on the anatomy of the player's hands. Obviously it is not useful to write large skips or consecutive chords where legato or *l.v.* is wanted.
- Although it is basically OK to use two basic "dynamic" levels (like "tutti" and "solo") if a harpsichord with two manuals is used, it is advisable to leave the exact choice of the stops to the player. Harpsichords are very different and the difference between the registers (high - low) within a stop are often greater than between the stops. Thus it is almost impossible to know beforehand if, on the harpsichord used, the 8' stop on the upper keyboard would sound louder, softer or equal in comparison to the 8' stop on the lower keyboard.
- Stops in baroque harpsichords are hand-stops and sometimes inconveniently placed. Enough time should be provided for at least one hand to make the necessary stop changes.
- The music stand of a baroque harpsichord is usually much less wide, less high and more tottery than that of a grand piano. Good to remember when choosing the size of your score (preferably smaller than DIN A3).
- It is advisable to write on not more than two staves whenever possible: the upper staff for the right and the lower staff for the left hand regardless of keyboard or register. Moreover, because every player has different hands and different mental routines, composer's eagerness to smartly divide a one-voice passage between the two hands may be more harmful than helpful.
- What about the good old sixties, you ask, preparing the harpsichord with screws, bolts and rubber, or hitting the instrument with your fists, arms, or feet? First, a good instrument must not break from being played. Secondly, the instrument is made for music and not the other way around. Music always comes first. Hitting the instrument with the fist instead of one finger is actually less strenuous for the instrument because the hitting force is spread out in a larger area. Large clusters were already used in the Baroque Era. Preparing an instrument with screws, rubber etc. can (but does not usually) damage the strings. As strings (or in the worst case the whole instrument) can always be replaced, the question becomes essentially an economical one: is the "total experience" worth the time, effort, and expenses – of which especially the last one is of your concern.

However, all this is just pragmatism. If artistic demands contradict the practical ones, the latter must always back down. Besides, it is often more rewarding to create and perform masterpieces that are in contradiction with the tradition and through their extreme demands enhance the spiritual universe of both the performer and the audience.

Making an instrument

"The makers of historical instruments usually have very little good to say of one another, which might perhaps cast doubts as to the universality of their solution", says Raymond Leppard in his *Authenticity in Music*. Categorizing harpsichord makers with sopranos may be somewhat of an exaggeration, but it is true that especially during the boom of harpsichord building in the past decades harpsichord makers used to be somewhat over-sensitive to "authenticity". Even defaults and weaknesses were copied, because they were "in the original" - just like most players still carefully practice and play every printing error that they encounter in a score of Bach or Mozart.

If the original instrument makes coupling/uncoupling during playing practically impossible, if the music stand is too small or tottery for contemporary scores, the 4' stop toneless or black keys go down too deep, why not try and exceed the master of the original maker instead of sticking to the shortcomings or weaknesses, why not replace "authenticity" by "development"? Bach would have been overjoyed by a better harpsichord. If an instrument is intended for music-making, it should keep up with the development of music. But then, maybe some makers do not

want any development to happen. When did you last see a harpsichord maker – or any instrument maker, really - in the concert when music of *their own time* was played?

Did not the so-called modern harpsichord, a creation of our century, represent development? Why then is it practically extinct? After all, it *did* offer the possibility to change stops quickly, it *did* widen the range with a 16' stop, and it *did* enhance the timbre possibilities with two harp stops ("lute" and "theorbe"). But obviously this was not what was really needed. Something else, something that the baroque harpsichord could offer, was more essential. Was it the sound? When the sound is really great - and on a modern harpsichord it hardly ever is - there is no need to change it.

The sound and greater flexibility of the baroque harpsichord were probably decisive. Its lightness of action, easiness of tuning, transportability, price and, last but not least, the great sound seem to be unbeatable. The violins have not become much better either since the time of Stradivarius & Co. Yet, there *are* many untried paths in the development of future harpsichords. What we need, is an open-minded, innovative and courageous harpsichord maker – or two, if it is not too much to ask.

I understand that for an instrument maker, the instrument itself is the goal. In a way it should be, too. For a true musician, however, the **music** is the way to eternal life and the instrument is mainly a tool in service of this sublime purpose. Therefore, the discussions on a possible future harpsichord between a historical-copy-maker and a future-creating-composer are loaded with emotional tension. To be totally fair, though, I admit I *do* know a few creative-minded harpsichord makers who are actually great fans of contemporary music and thereby interested in taking the next step in the glorious development of the Queen of instruments. They deserve the full support of the harpsichord community to be able to fulfill their dreams.

The future harpsichord

Why reject the car and return to good old ox wagon? Why not catch up with the development and make a *real* modern harpsichord for future music? So far, the few experiments to create a “modern” harpsichord have not shown much real advantage. If jalousies and pedal stops (late 18th century), three keyboards with 2'- and 16'-stops (already in the 1730's!) and other technical innovations couldn't save the harpsichord from being put aside to make room for new musical styles and demands some two hundred years ago, why would they help today? And yet, in the middle of all kind of electronic instruments, I still indulge myself with the belief in the coming of a “21st century harpsichord”, a new exiting era, where combining a timeless instrument with latest technology leads to new, unheard-of experiences. Why not fancy of:

- new stops, either sets of plectra ("nasal", "whisper",...) or sets of "modulators" on strings ("buzz", "harmonic",...)
- pedal **and** manual controls
- wider range and larger, yet light-weighted case (2'-, 16'- and why not 32', too, if the instrument is long enough)
- a bending tone/vibrato device, perhaps as "after-touch" on each key
- a moving bridge for micro-tonal shifts
- "harmonics" producing device (or stop), i.e. a mechanism that would lightly touch the plucked string at a harmonic node
- a possibility for gradual register shifting (pedal)
- 3-4 keyboards, at least one with split keys for micro-tonal tunings
- expandable music stand for large scores
- computer-controlled tuning system, which can be changed “on the fly”
- "computer-aided musical performance", with real-time processing of sound, musical structures, spatial movement...

All these (and much more) could be made optional, if the whole instrument could be conceived "modular" enough. Expensive? Not if compared with e.g., a large church organ – which already has gone a long way to this direction. Too big? Not if compared with the first synthesizer built in the beginning of the 20th century. It was *so* big that 30 railway wagons were needed to transport it! Where is the pioneer spirit of the harpsichord world today?

Then, why not simply make an electronic instrument to emulate all this? There seems to be a basic psychological difference between playing an acoustic and playing an electronic instrument. Why else would the makers of electronic instruments so desperately try to imitate traditional acoustic instruments? Why else would the composers still today prefer writing for acoustic instruments to writing for electronic ones? Why does the number of harpsichord players keep increasing?

In 1606 Trasuntino built "archicembalos" for Nicola Vicentino's 31-keys-pro-octave microtonal system. Is there any reason for us to be less creative? No market? Van Gogh managed to sell only one of his paintings. It is the act of creativity that counts.

The author's compositions for harpsichord:

Overture for flute and harpsichord

Yang for ensemble

M concerto for micro-tonally tuned harpsichord, strings, and percussion [Finlandia FACD 402]

P=Pinocchio? for voice, ensemble and computers

Fantango for micro-tonally tuned harpsichord [Finlandia FACD 365]

Tango lunaire for harpsichord, flute or oboe, clarinet, violin and cello

Arsenic and Old Lace for micro-tonally tuned harpsichord and string quartet [Auvidis Montaigne MO 782033]

Prélude mesuré for (micro-tonally tuned) harpsichord and optional tape

Veto for harpsichord [Ondine ODE 891-2]

Interludes for tape and optional harpsichord

Musica ambigua for recorder, violin, viola da gamba and harpsichord

Lots / Tiet for recorder or flute, violin, viola da gamba or cello and harpsichord

Etudes: train, drain and grain for harpsichord

Brandi - the 2nd movement to J. S. Bach's 3rd Brandenburg Concerto for strings and harpsichord

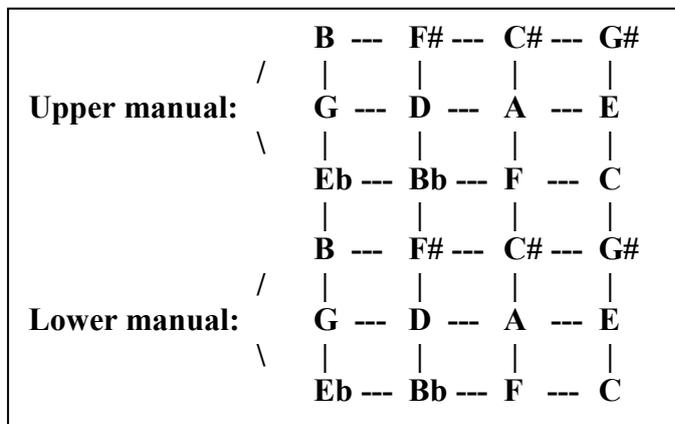
Mora for tenor voice and baroque orchestra

Appendix

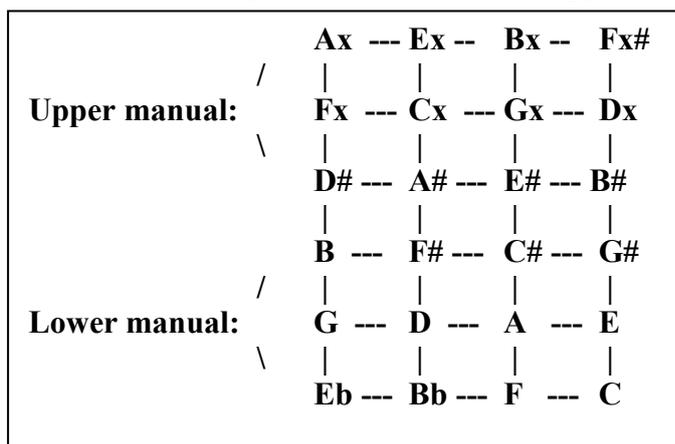
The tuning of the harpsichord used in the author's compositions *Fantango* (1984), *M* (1980), *Arsenic and Old Lace* (1990), and *Prélude mesuré* (1983...).

The goal was to create a tuning system with the maximal number of perfect fifths and thirds on a double-manual harpsichord. The result presented here contains 20 perfect major thirds, 15 perfect minor thirds and 18 perfect fifths (and fourths).

(In the diagram below, --- indicates a perfect fifth, | indicates a perfect major third):



or, to be exact (x indicates a double sharp):



Note, that the interval from the lower manual B-natural to the upper manual E-flat (actually D#) is also a perfect major third. Same for lower F# to upper Bb etc. Thus a key on the upper manual sounds always 41 cents lower than the corresponding ("unison") key on the lower manual. (Difference between one octave i.e. 2:1 = 2.0 and three consecutive major thirds, i.e. (5:4)³ = 1.953125, is 1.024 corresponding to 41 cents, ca. 1/5-tone.)

Besides several perfect triads (i.e. both fifth **and** third perfect, no beat) on *both* keyboards (Major triads on D, Eb, F, G, A and Bb, minor triads on C#, D, F#, G, A and B) an additional selection of perfect triads can be obtained by combining keys from both keyboards, e.g. F#(lower kbd)-A#(upper)-C#(lower). Although we are not looking for perfect triads (and I do not remember having used any in my compositions, so far). this simple example tells something about the flexibility of the system. Instead of having just one interval to represent all major thirds and diminished fourths, like in equal temperament, you now have a selection of different sizes of "major thirds" at your disposal – including such exotic ones like triple-diminished fifths (e.g. Ex-Bb) or double augmented seconds (e.g. Eb-Fx).

If you want to experiment with this tuning, you can program it to your tuning device or directly to your synthesizer by using the following table of deviations from equal temperament (in cents, A = 0 taken as reference):

upper keyboard: C -25, C# -55, D -43, D# -31, E -39, F -27, F# -57, G -45, G# -53, A -41, A# -29, B -59

lower keyboard: C +16, C# -14, D -2, D# +10, E +2, F +14, F# -16, G -4, G# -12, A = 0, A# +12, B -18

It may be worth noticing, that using only one keyboard at a time, a wide range of baroque music can be played on this tuning, too.