

Author: Doni, Giovanni Battista

Title: Demonstration of the penta-harmonic [mixed-harmonic ante corr.] harpsichord with five particles for every tone, five keyboards and another two repeated ones

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[<f.1r>-] Explanation of the penta-harmonic [mixed-harmonic ante corr.] harpsichord with five particles for every tone, five main keyboards and another two repeated ones by Giovanni Battista Doni

I wrote these little verses myself, but someone else took the credit.

Thus you, not to you

[<f.1v>-] Before I left Rome in 1640, I had my *Notes on the Compendium of the Genera and Modes of Music* printed. I had had them printed four years before in my city of origin. Among the very notable novelties brought out by me in said *Notes* one can see the previous illustration, which is only a small drawing of an instrument with five keyboards stacked one on top of the other with the division of five particles for each tone. I wanted to demonstrate briefly how, if one eliminates the large number of unisons that were seen in the past in the instruments that Father Vicentino first and Father Stella in Naples and many others in other places had built, one could perfect that sort of instruments by reducing the number of their strings and rendering them easier to play and tune, since in those instruments the confused and intricate multitude of notes and so many keyboards frightens every expert player and tuner, and it cannot be realised without unending tedium and only slight advantage. [<f.2r>-] I did not bother to draw the whole of the keyboard as others did, since this seemed to me redundant, or to reduce it to an octave, since those that did so had the mere intention to show now many notes were contained in the space of the tones and how many within those of the semitones, so that just three keys would have sufficed to that aim. In fact, between D la sol re and E la mi one can see the division of the tone, and between E la mi and F fa ut the division of the semitone. Also, I did not waste time and effort in drawing more accurately the structure and working of the entire keyboard and of the whole instruments, since I deemed and I still deem it of little use and much inferior to that of our di-harmonic and tri-harmonic harpsichord, one of which I have here in Florence, while others can be seen in Rome and are used there every day. All of them are proven to be extremely easy to playing and of great perfection, since any average player can play on them not only all the compositions with or without words at any pitch, but also the famous harmonies of the ancients, the Dorian, the Phrygian etcetera, which we restored and we have demonstrated in part in front of the public with those few examples and compositions written by several very expert composers at our request. The best and most beautiful part of music consists of these harmonies, according to all of those [<f.2v>-] who have known them well and have considered them with a free and impartial attitude. The ease in playing these works is such that the player, if he is not totally devoid of intelligence and wit, can master them easily in half an hour and be able to handle the entire instrument at will. What happened to that famous sculptor who, after he used certain figurines as small models for larger sculpted reliefs and after he threw them away, is

the same that has happened to me. In fact, in the case of the sculptor those figurines were collected by another artist, they were placed by him on a small stage and animated with hidden strings in front of the audience, and thanks to this he became very famous and was better known than the gifted sculptor with its marble bas-relief, which had been created with great application and artistry, but was put aside and was known only to a select few. In fact a certain composer, after he considered the little drawing and division of the intervals, and perhaps the illustrations that are on the following page of my book mentioned above, where one can see the distribution of the five parts of the tone ascending gradually with their accidentals, had a similar instrument built in order to gain credit among learned persons. When it was finished, he boasted that it was the most perfect that had ever been seen, [-f.3r>-] but he feigned ignorance deliberately as to the person from whom he took its invention and the model. Up to now (the instrument was built about three years ago) I suffered patiently, I lauded the work and praised the author whenever I had the chance in front of powerful people who were in a position of patronise him, but I always kept quite about the fact that I was the first inventor of it, so that I may benefit him even at my own loss. I did this with utter selflessness, as God, who sees inside the heart, can vouchsafe. I thought that he was as virtuous and honest a person as anyone else and I hope to receive from him some help (as he is a good practical musician and a very expert one) towards establishing and restoring matters so important in the field of music which I resurrected through my efforts and studies, especially those concerning the nature of the tones and of the different harmonies that were researched with great application by the first experts in this field in the last century. Finally, I realised that this hope was in vain and it was hopeless to be supported in these ideas by someone who had hardly any regard for these harmonies (he called them simple transpositions) and who also despises all my other inventions, [-<f.3v-] as I was able to ascertain from the conversations that I had with him every day. Also, since I thought it very strange that he told me to my face that he knew more about music when he was asleep than I did awake, especially after the publication of my Latin work *On the superiority of the music of the ancients*, I was not longer able to keep to my initial resolve. Therefore, I decided to reclaim in front of the judgement of the world what is rightly mine, according to what nature itself teaches us and in conformity to every divine and human law. So, I elected to let my reasons be known to everyone with this short writing, without exceeding, anyway, the boundaries of modesty, which I intend to preserve in everything that I do. I believed it necessary to do so even if this good composer, despite these disagreements of ours, asked me to compose for him a Latin inscription for a certain instrument of his with which he said that he was the first to achieve at last what others had tried but failed to achieve so-far. I know that he will try to justify himself by saying that he never boasted to be the first inventor of this instrument, as he knew that Don Nicola Vicentino was the first one who had the idea to divide the tone into five parts, but that he had been the first one to divide it and [-<4r>-] to do so in the best and most excellent way possible in order to find in it all the consonances and to be able to play anything on it. In short, he ascribes the theory behind this instrument to Don Nicola, but its practical realisation to himself. As for me, *not even a word*. Therefore, the entire matter revolves around this, namely, ascertaining to whom the practice or distribution of this instrument should be ascribed, whether to him or to me. Once this has been established, the disagreement is over and the matter is solved. So that one may fully understand this issue, one must know that Don Nicola Vicentino, a very good keyboard player for those times (he lived under the patronage of the great Cardinale Ippolito da Este,

who was a unique patron of musicians and writers) wrote some musical works in which, to speak freely, he shows that he is not a very good theorist. Therefore, it is not strange that Zarlino and Salinas, the two main music theorists of that time, did not dignify him with a mention in their writings, albeit in a few places they mention his inventions. Vicentino himself had a harpsichord built that he called Arch-harpsichord (just as he had himself called Arch-musician) where, with the aid of six keyboards stacked one on top of the other, the tone was found to be divided into five parts or dieses, which were not equal, as he thought because of his limited knowledge [-<f.4v>-] of the canon and of the proportions, but rather unequal as Salinas demonstrates learnedly at chapter twenty-eight of the < > book of his book on music. It is inevitable that one finds in it many unisons and many redundant strings. In fact, between C and D, for instance (which are the first two strings and keys of the instrument and the boundaries of the tone) one finds only four strings and as many intervals. Consequently, one had to build above it a correspondent number of keyboards and no more. The reason he had in building this harpsichord was simply to find all the consonant intervals above each note or string, which constitutes the entire excellence of music, as some believe. Others then, such as Colonna and Father Stella in Naples, were not content with this number of keyboards and added other ones (with great confusion, as I said, because of so many unisons and redundant notes, and with no less difficulty and waste of time in tuning and playing said instruments) in order to be able to play all said consonances happily and easily not only in the participated tuning but also in the perfect one, as it was their belief. In fact, it in the system of four octaves [-<f.5r>-] eight keyboards with 232 keys are not even sufficient to realise the perfect tuning in them if one wants that each note should have the correspondent consonant above and below, while for the participated tuning five keyboards with 120 keys are enough. Since I was the first one to discover this fact and to divulge it in the said passage of my *Notes*, I do not know how this choice composer can expect to have been its first inventor and claim that he was the only one to achieve to do what others before him had tried to do, but in vain. He shall say perhaps that in that passage I only hint at how one could build a harpsichord with six notes, five intervals for each tone and two main keyboards instead of five, as it is the case in his instrument. I shall reply to you that the mention of two main keyboards proceeds from the knowledge that such division is much more useful and perfect than the application of five similar keyboards, as in in his instrument. Therefore, as I wanted to observe the brevity that I always liked, I did not think it appropriate to deal in detail with the division of the tone into five parts in the aforesaid passage, since even a child would have been able to know that, to build an instrument with five similar keyboards, it would have sufficed to copy one from those described by Don Nicola. Is it perhaps the case that his book was not printed with the a large and faithful drawing and that it was not disseminated widely? A copy of the book is available to consult in the public library of Saint Augustine in Rome, if anyone wants to see it. [-<f.5v>-] He shall say perhaps that his invention consists in having been the first one to discover the first true disposition of the notes or the most comfortable one for the practice of playing. He shall say that he did not lay them out, as others did, in a continuous sequence from the low to the high register, with the second keyboard a fifth of a tone higher than the main keyboard, the third one two fifth of a tone higher and the others gradually in a similar way, but, in an way that helps the fingers find the flat and the sharp notes across the other keyboards when one plays the main keyboard, and that he laid them out with such artifice that the first and main keyboard is followed by the one that is higher at the distance of three fifths of a tone, which is the one of

the flats, which is followed by the one that is at the distance of two fifths of a tone which constitutes the diesis; in turn this is followed by the one that is only a step removed or one fifth of a tone, which is followed finally by the one that is four fifths of a tone higher, so that the first one or main one is the lowest, the last one is the highest and the others in between are higher the lower they descend. Now, here is where the controversy and the main point of contention lays. I shall demonstrate clearly that he lifted this very disposition and distribution from my book, so that what doubt will there be left that this invention does not belong to him but to me? Therefore, I invite the expert reader to consider the value and property added by me to each split key in the following figure and the order in which they are laid out. There reader shall find that they are the ones used by the followers of Don Nicola, which, it seemed to me, could be notated more appropriately in this way:

[Doni, Demonstration of the penta-harmonic harpsichord, 6r; text: i, 2, 3, 4. [signum]],

and correspond exactly to the the sequence of the keyboards of our able composer. Therefore, if his instrument does not differ from mine in the number of the keyboards and in the way they are laid out, I would like to know what he added to it of his. Nothing, in truth, but the material drawing and the measure of the keys and of the leavers. Which is something that he must admit that could have been done by any competent maker of harpsichords, however hard he worked at it, since the entire effort of that job consists in thinning and orienting the leavers so that they reach the position of the jacks in such a way that they are all contained within one sequence and they do not obstruct one another. Therefore, this is what such subtle artistry and new and marvellous invention (which makes so much noise and is directed mainly against the application and the reputation of our di-harmonic and tri-harmonic harpsichords) is reduced to. We shall see a little later how much more excellent and useful these harpsichords are, after [-<f.6v>-] we have illustrated the imperfection of that one, not for malevolence or a desire to discredit him, but to restore to our type of instrument the reputation and esteem of which this man attempts to deprive it and to prevent those who let themselves be convinced too easily from being fooled, since our instrument is the most perfect and excellent of its kind. The first imperfection consists in the uniformity of the keys and of the keyboards as to their shape, colour and remaining features, since this uniformity does not allow the player to distinguish the locations of the tones and of the semitones, thus creating a major problem for the player. Therefore, it is no wonder that only he and a student of his play his instrument, while other players do not want to attempt it because of its difficulty, as they consider it almost unplayable. The second difficulty derives from the fact that all the keyboards except for the first one have the keys too far removed from one another, to the extent that one cannot play on it fast pieces as one does on the lower keyboard. This ease of playing should not have been overlooked in my opinion, especially since the other keyboards are similar to the main one in every other respect and the greatest advantage that can be derived from such instrument consists in the ability to transpose higher or lower to suit the voices one accompanies. The third and greatest one [-<f.7r>-] consists in the fact that the player's fingers do not find themselves in front of sharp and flat keys except when one plays on the first and main keyboard, since from the second and the third one the player can reach only the sharps, from the fourth one only the flats and from the fifth one neither of them. It is true, however, that by turning the fingers backwards, namely, by playing the natural notes of a piece on a higher keyboard and the accidentals in the lower ones, one

succeeds in some way to reach both of them, but this cannot be achieved without much discomfort and with an inappropriate posture of the hand, since, when one needs to play a sharp or a flat note with the middle fingers, as it is most often the case, instead of being pushed forwards, they are retracted backwards. However, so that nobody may believe that these difficulties are impossible to overcome and to stop them say that it is easy to correct somebody else's work, while what is important is to make an improvement, I want to show here the drawing of a keyboard which, since all of the aforesaid drawbacks were avoided in it, consequently it must be considered to be much better and more perfect than his. By doing this, I shall show clearly that the person was able to create this was also able to improve that one to complete perfection, had he judged that it was worth his while, since the print provides utterly evident witness to the fact [-<f.7v>-] that the two main elements of it, which are the number of the keys and of the notes without the unisons and the disposition of the keyboards have been invented and divulged by me.

Drawing of the disposition of an octave in the aforesaid harpsichord

These illustrations represent an entire octave of the harpsichord invented by me, which I had not published for the reasons state above. One can learn from it easily the order and the disposition of the rest of the instrument, [according to the popular saying, *There is no need to repeat the same thing with regard to the octaves* add. in marg.] as anyone can gather from this little sketch that does not include the perspective of the instrument, because it completely clear that each keyboard is equally raised above the one immediately beneath it by the height that is used commonly in other similar instruments. The first five keyboards are the main ones, while the other two contain accidentals and repeated notes, to facilitate the player in finding sharp and flat keys when he plays on the high keyboards, as it occurs in the lower ones. In fact, in this instrument of ours built with a continuous sequence of notes, rather than an interrupted one, said sharp and flat notes are found always by extending the fingers forward and in the highest keyboards, [-<f.8r>-] in this way. When one plays in one of the first four, one always overlooks the following one, since it has no harmonic correspondence with the notes below it, which is the keyboard where one plays, while the sharps are found across all of the third one and the flats across all of the fourth. Thus, if one plays on the second one, one never touches the keys of the third one, but the relevant sharps are found in the fourth one and the flats in the fifth one. The same occurs when one plays on the third or on the fourth keyboard. However, if one needs to play on the fifth one (which is the last one of the main ones) the sharps are found in the next one, which is the sixth one, and the flats in the seventh and last one. In this way, with an uninterrupted and most attractive order, one shall be able to find easily all the necessary notes in whichever disposition without bending the fingers backwards and without the discomfort and effort that one experiences in this composer's instrument. The advantage of those two keyboards containing repeated notes consists in the fact that, since their keys are glued to the same leavers that move the keys of the first and second main keyboards, when they are played, the same strings are plucked and the keys of the two lower keyboard are also pressed accidentally [-<f.8v>-] without producing any inconvenience or drawback. Therefore, I have drawn them here indicating this correspondence with a straight line, so that the keys of the sixth one are connected in practice to the ones of the second one and the ones of the seventh with the ones of the third one. [I also added the same signs to ensure greater clarity. add. in marg.] Moreover, so that

everyone may be convinced that it is possible to arrive easily with the fingers up to the fourth keyboard, we have drawn here the keys as much as possible of the required size, so that, should one desire to test this on the illustration itself by placing one's finger on it, one shall be able to know that it is possible to play with ease on all five of them and to reach the required notes. Also, to aid the player and to save space, one could arrange the front of the keys in such a way that their angles are rather projecting, as it is common in narrow staircases and it was done in the steps of the amphitheatre, where the audience sat, so that the legs and the feet of those who were sitting in the row above did not bother those who were sitting below them. For this reason those seats were called *cunei* (wedges) from their similarity to that shape drawn from below, as I discussed elsewhere. This advantage and reduction of space in this instrument of ours is all the more useful and appropriate because it allows the player, during the playing, to hold [-<f.9r>-] the hand in such a way that, while the body of the hand is still, the fingers describe a circular movement that corresponds to that slight retraction that, we presume, occurs in the front region of the keys. It remains for us to explain why earlier we drew the keys one next to the other, rather than separated by a moderate intervening distance as this composer did in the keys of his four upper keyboards, so that one may realise how much more perfect the lay-out of our instrument is. Since musicians and players rely so much nowadays on being able to play and sing the same piece higher, if one wants (to which effect I have heard that a harpsichord by the Florentine Iacopo Ramerini is highly rated in Rome, where one can hear this difference from a semitone to a semitone at least across a ditone) I cannot understand why our composer wanted to exclude the availability of this feature in his instrument when the player wants to play fast pieces with quavers and semiquavers, which in truth can only be played if they keys are adjacent to each other. For this reason I wanted that our keys should be adjacent. I had the idea that, in order to do so, the keys could be placed at the usual distance between each other, while their
can be built so much wider that they almost touch each other, as one can see here
[signum]

[Doni, Demonstration of the penta-harmonic harpsichord, 9v].

Our instrument is also more perfect under this point of view, namely that, while in instrument one must look first to find a particular note, and once one has found it, it is easy to mistake it with another one because of their complete uniformity, I resolved this inconvenient issue in our own by marking only one note every octave. In order to do so, I chose A la mi re, not so much because it is the first, the final and median of the ancient musical system or scale, but because it appears to be really the most appropriate and suited to this function, since all the others are integral parts of the tetrachords, while only this one is left out, at least in the disjointed system (the one that progresses with the [sqb]) which is the one used most widely. Therefore, it seems to me to be a good idea to glue a small piece of wood across each span of said note A la mi re in all the keyboards and octaves in the interior part of those keys which will be lifted considerably, so that they may distinguished not only by the eyes, [-<f.10r>-] because the colour black sticks out among all the other keys, but so that the fingers might find it easily even in the dark. One should not believe that two split keys cannot be glued to the same leaver and cannot be moved together. In fact, if they go straight towards the same direction, as they are portrayed here, for instance the third one of the first keyboard (c sol fa ut) and the second one of the fourth one (b mi), there is no doubt that they can be used

(which is proven) to the same string and leaver and to produce the same note. However, it causes no harm at all (for greater clarity and to allow those who are not experts to understand) to indicate more clearly which ones are these unisons and why they are employed. The unisons and those that move together are the ones that are marked with the same symbol, which is either one or two lines across, which seemed to me the simplest and quickest way to mark them and to identify them. Also, because of the keys of the sixth keyboard are unisons, as I said before, and they move together with those of the second keyboard, while the ones of the last keyboard move together with those of the third one, [-<f.10v>-] hence it follows that some of them are truncated. For instance, the c sol fa ut of the second is the same not only as the c sol fa ut of the sixth but as the [sqb] mi of the fourth. However, the signs clarify the matter to such an extent that there is no need to waste any more words. The inquisitive Reader should observe that, instead of reproducing in the sixth keyboard the first one, we placed the second one, as the first one would have been completely useless, since it has no harmonic connection with the fifth one, which is the adjacent one below it, while it would have been necessary to add another one, although having eight keyboards provided no advantage on having seven. Moreover, these unisons are necessary for the following reason. From A la mi re of the first keyboard to C sol fa ut there are eight portions or fifths of a tone, since five are ascribed to the tone from A to [sqb] and three to the major semitone from [sqb] to C. Now, let us consider the note [sqb] mi of the fourth keyboard and let us compare it with the aforesaid C of the first one so that one can see that it corresponds to it as a unison. Since said note [sqb] is five particles higher than A, which is the one next to it, and this one is three particles higher than the A la mire of the first keyboard, if we add [-<f.11r>-] together those distances, the [sqb] itself of the fourth keyboard shall be eight particles higher than the A of the first keyboard, which is the distance by which we presumed in the beginning that the note or key A of the first keyboard should be higher than the note or key C. Consequently, said [sqb] of the fourth and the C of the first one are unisons. The same rule applies to the other unisons that are in all four couples for each octave, as the signs show in the illustration, namely two C C with two [sqb], [sqb] and two F, F with two E, E. This derives from the interposition of the semitones between the tones, since, if the harmonies consisted only of tones, this would not follow, but every key would have its individual function. It remains for us that we should indicate the signs of these split notes (for the benefit of everyone and in particular of those who are less knowledgeable in this field, since this explanation is redundant for those who are expert theorists) the way of notating compositions written or arranged for this instrument and how to tune it. I shall strive to do so in conformity to our vow to declare everything of what little we know, while our able composer appears to hide these notions for himself as if they were some great secret. Let us state as a foundation of our reasoning that the best and simplest way to mark the four octaves [-<f.11v>-] is the one that we showed earlier, by notating the first one with capital letters each of them with the addition of the grave accent, the second one with capital letters also, but without accent, the third one with lower case letters but without accent, the fourth one with lower case also but with the acute accent and the last one, which is the twenty-ninth key, which ends the fourth keyboard and begins the fifth will be distinguished with a double acute accent. Secondly, we choose the signs placed here on the side to indicate the degrees of division into fifths of a tone (which in Latin would be called *pentemoria* with a word borrowed from the Greek) because they are the simplest and more coherent signs that would enable us to do so.

[Doni, Demonstration of the penta-harmonic harpsichord, 11v; text: i, 2, 3, 4]

The first of them indicates that the note is raised by a fifth of a tone, the second one that the note is raised by two fifths (which commonly, but improperly, is indicated with the sign #) the third one that the note is raised by three fifths (which corresponds to the flat sign b) and finally the fourth one that the note is raised by four portions of a tone. The fourth and the first one are not used commonly because there is no correspondence with the notes of the fundamental tone or harmony, for instance, of the first keyboard, which notes would be called *ecmeles* by the Greeks. As to the signs used by Vicentino, Colonna and by Father Stella, I do not like any of them because they often repeat each other needlessly [-<f.12r>-] and because they mix the sharps with the flats, although I used them earlier to make myself clearer without being prolix in my description and in the sketch of the penta-harmonic harpsichord. It seems to be that one could distinguish the keyboards appropriately by using the clefs normally used by placing the numbers from one to five beneath the clef to show on which of the five main keyboards the played must play or place the hand. This shall not be necessary in the case of the other two repeated keyboards, since they are only used with an extended finger when one plays on the keyboards beneath them. One shall be able to place the accidentals of the score above the clefs themselves, from the first on onwards, as one can see here, [which is something that works in the case of all the clefs add. in marg.]

[Doni, Demonstration of the penta-harmonic harpsichord, 12r; text: 1, 2, 3, 4, 5]

Thus when one notates the compositions for this instrument, either one should write them with two sets of lines, one for the right hand and one for the left, as it is customary to write the pieces for the harpsichord or the organ, or one should write them with several sets of lines in open score, as in the scores of ensemble pieces. When one has to exit and move from a keyboard to another one, it will suffice to repeat the same clef with the addition of the numbers and of the signs added on top of it. In order to facilitate the composer, one must highlight the correspondence [-<f.12v>-] or unisons of the keys that (although located on different keyboards and orders) produce the same note as they hit the same strings, although here and there they absolve a different function and are notated with different symbols. For instance, the A la mi <re> of the fourth keyboard serves also as the B fa (called by the ancients Trita Synemmenon) of the first one. In this way, when the composer needs to use said note, although he is completely devoid of theoretical knowledge, he can know its position and value, while the player, similarly, will be able to find it easily although it is notated differently. [signum] In the illustration placed below I marked the notes of three keyboards within the span of an octave. I drew the notes of the octave of the first keyboard, as it is considered the main one of all the others, the ones of the octave of the third one, which, among the other notes contains the sharps of the first one, whose function is (so that practical musicians may understand me) to find the notes that produce the major consonances, and the notes of the octave of the fourth keyboard, which contains the flattened notes of the same first keyboard and the minor consonances. In the first one, the notes written with the breve are the eight natural ones of the tone and correspond to the keys of the same keyboard; the semibreves represent the notes altered by the accidentals which were called by the ancient metabolic and enharmonic and are located in the higher keyboards. For this

reason they are more erect than the others. [-<f.13r>-] One may also observe that the notes with the diesis of the first keyboard in the third one have the same name (in other words they correspond) to the same string, but it is not the same in the case of the notes altered by the flat sign b. For instance, the C sol fa ut with the sharp sign of the first one is a natural C sol fa ut in the third keyboard, but the b fa of the first one is an A la mi re in the other one. This occurs also in the common scores written for a single keyboard. In fact, the notes that are raised with the sharp sign, since they are closer to the natural note and lay at the distance of a minor semitone, they are written with the same note, while the notes altered by a flat sign, since they are at the distance of a major semitone, they are written as the next note above. Now, if one wants to find this very correspondence in the keyboards above, for instance, if one wants to play the second keyboard as the main one and fundamental of one's piece, this illustration can be employed usefully by changing only the signs and numbers added to the clefs. In fact, the fourth keyboard will take the place of the third and the fifth will take the place of the fourth. As to the way to tune this instrument, once the first keyboard is tuned, since the next one does not correspond harmonically to it, this seems to me the simplest way: one should move to the third keyboard and tune the F fa ut to a participated fifth above the [sqb] mi of the first one and continue by tuning the other ones of said third keyboard. Once this is done, one should tune in the same way the F fa ut of the fifth one from the [sqb] mi of this one, and so on. [-<f.13v>-] Once this is done, one must change register, as they say. In fact, in order to tune the second one, one shall play the [sqb] mi of the fifth one with the a <la> mi re of the sixth one, which is the same note, at the distance of a fifth. In fact, since it is a minor semitone or two fifths of a tone higher than the aforesaid F <fa> ut of the fifth keyboard, it can be taken as its sharp, which is a fifth above the [sqb] mi. Once said note has been tuned, the others will be tuned placing the fingers where one wants, either on the second keyboard or on the sixth one, which is the same. I overlook the second one because it is the same as the third one. It remains for us to tune the middle or forth one. This will be done through the same notes [sqb] mi and F fa ut of the first one, namely, with the lower fifth rather than the one above, by tuning under it the A la mi re of the fourth keyboard in unison with the b fa of the first one and then the others in sequence. Not only this tuning system is the most easy and simple, but it also shows how right it is that the system of this instrument should start from the note A la mi re, since one has to use it twice because it serves as [sqb] mi and b fa, which are, so to speak, the most mysterious notes of the musical harmony or system because of the relationship that one has with the sharpened notes and the other one with the flattened ones.