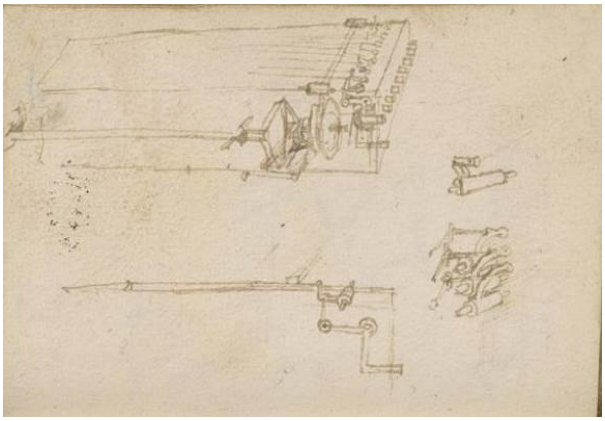
The *Viola organista* – a lost instrument

Sławomir Zubrzycki

In a world of advanced information technology, everything seems to be known and researched, and information on any topic is readily available. However, when in 2009 I became interested in a forgotten and unknown instrument called the *Viola organista*, information about it was very scarce. Designed more than 500 years ago by Leonardo da Vinci (1452-1519), it was never built in his lifetime. The manuscript sketches and drawings, notated with Leonardo's characteristic mirror writing, are currently in three collections: the Codex Atlanticus at the Ambrosian Library in Milan, the manuscript 'H' at the French Institute in Paris, and manuscript II at the National Library in Madrid. Leonardo's design, not in the form of technical drawings - outlines the construction concept for a bowed string instrument which at the same time is a keyboard instrument. None of the sources presents the exact construction plans of the instrument. Rather, they are sketches of varying degrees of precision in which the general idea of the instrument is shown in several variants. Numerous details of the structure were also presented.

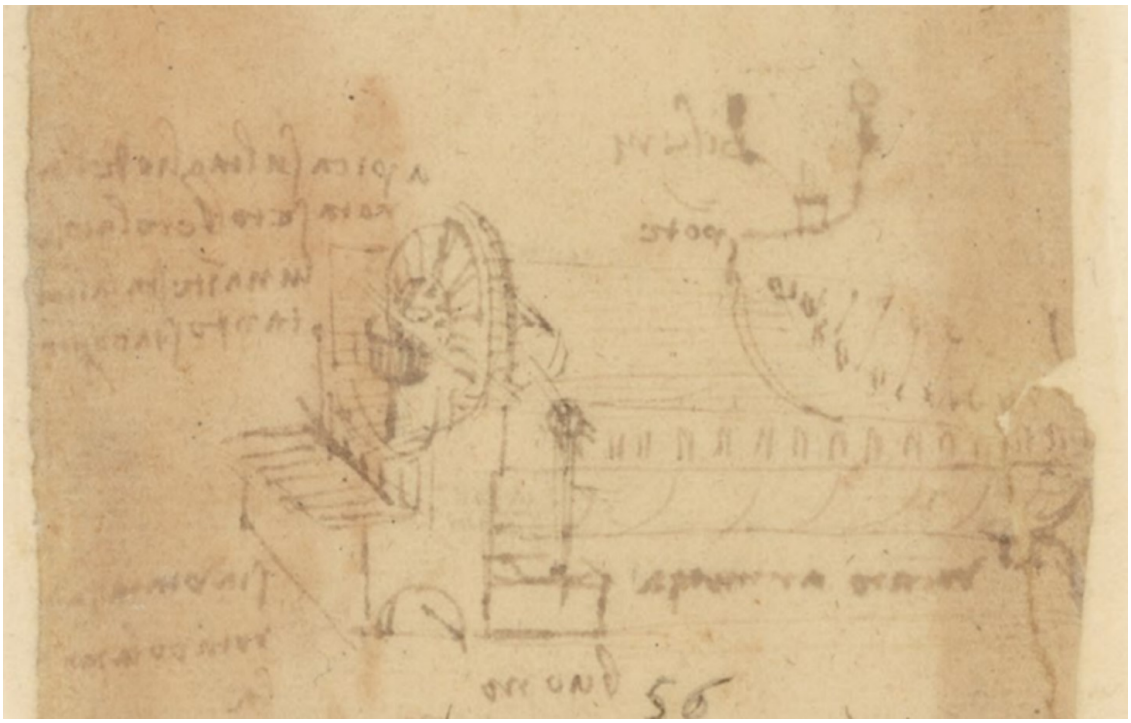
However, their legibility is not always sufficient to understand the designer's final intention. They can be interpreted as the presentation of a certain creative process aimed at identifying possible solutions and hypothetical effects that they may bring. Undoubtedly, the sketches show a stringed instrument with various body shapes and keys, which in some cases take the form of round or rectangular buttons (illus.1, 2).



Illus.1, 2 Various forms of the Viola organista *drawn by Leonardo da Vinci*

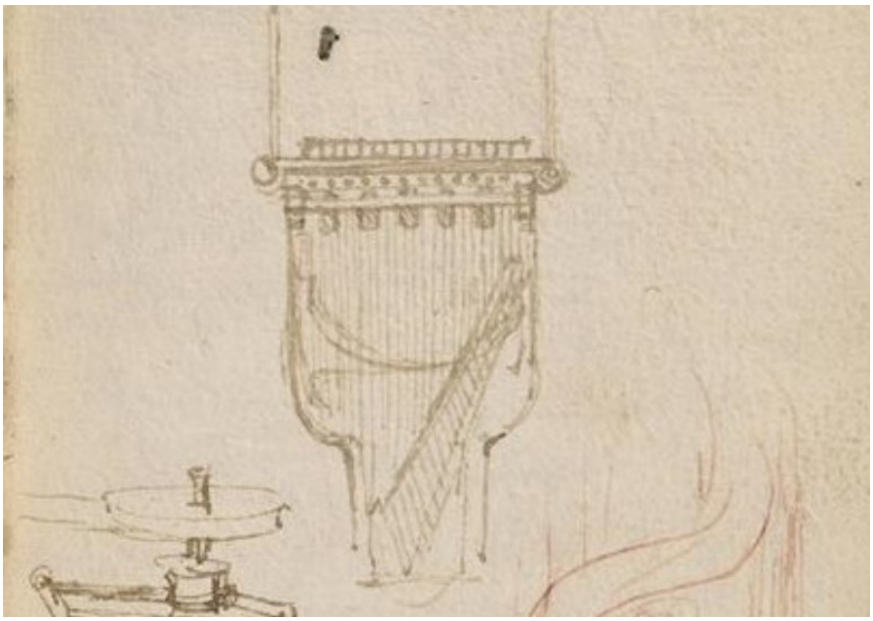
The instrument presented by Leonardo (illus.3, 4) is equipped with a mechanical bow in the form of a strip made of bristles or leather, moving on rollers over the strings or in the form of a circle. In each case, the bow functions like an endless belt, in a closed circuit. The sketches also show the details of the keyboard mechanism and the drive mechanism that sets the bow in motion. The structure of the soundboard (or rather a closed soundboard) is also legible, as it usually appears in a flat form, although in one case it is a hexagonal figure, and also in another it has a concave shape.

Even a cursory review of the sketches shows the possibilities of such an instrument, consisting in creating a continuous sound that can sound similar to string instruments, but through the existing keyboard makes it possible to perform a more complex musical structure than that usually performed on strings alone.



Illus.3 Viola organista *mechanism sketch by Leonardo*

Of course, it can be noticed at this point that the structure of the instrument presented in Leonardo's sketches is similar to one previously known, in the 11th century, an instrument called the *organistrum*, which later became a popular hurdy-gurdy, in a slightly reduced form. Instruments of this type also could produce a continuous sound through the use of a circular bow, which, by rubbing the strings, makes them vibrate, the sound of which is then amplified by a small box resonator. They also had a keyboard consisting of small buttons mounted in the body along the strings. The buttons touching the strings could shorten them (like the tangents in a clavichord) and thus create different notes of the musical scale.



Illus.4 Viola organista *string layout sketch by Leonardo*

So what is the milestone of Leonardo da Vinci's invention in relation to the hurdy-gurdy? Well, the *organistrum* or hurdy-gurdy was equipped with strings that performed two basic functions: some could be shortened with buttons (keys), while others played the role of a drone, which sounded continuously, giving the bass. Sometimes there were more drone strings and they were tuned in the octaves, or octaves and fifths. A single or double string shortened by the keys was used to play a melody, but because all the strings were touching the spinning circular bow all the time, this type of instrument had a serious limitation: the strings had to sound all the time the bow was in motion. Although it was possible to play different pitches on the melodic string, it was not possible to insert pauses between the notes: only the stopping of the bow movement made this possible. Then, however, all voices, both melodic and drone, had to be silent. Therefore, playing a polyphonic structure, where at any time a voice may become silent or return to play, was not possible. Independence and the number of voices were also limited – apart from the bourdon, only one melodic voice could sound. In addition, the continuous sound of the bourdon tied the music played on the hurdy-gurdy essentially to one key, that of the drone. These significant limitations must have been the reason why Leonardo turned to the concept of an instrument with polyphonic possibilities, in line with the logic of the development of the music of his time – an instrument that could fill the gap between other already existing keyboards on the one hand, and stringed instruments on the other.

The most important part of Leonardo's invention is a very clever mechanism that allows each string to escape from contact with the bow. Its additional advantage is that the sliding string does not change its tension and so maintains the same pitch, without excessive detuning (illus.5).

Illus.5 Viola organista *string mechanuism sketch by Leonardo*

The bowed instrument called the *Geigenwerk*, built by German craftsman Hans Heyden in 1575, with another version in 1600, is the first known instrument based on da Vinci's design. A description of Heyden's instrument, with its sound characteristics and musical properties is contained in the *Syntagma Musicum* by Michael Praetorius, published in 1618 (illus.6). The instrument promised to be a revelation, it was universal, combining the best features of various types of instruments: it produced a continuous sound like an organ, it had the sound of bowed string instruments, and you could play vibrato on it. It was a unique synthesis of harpsichord, positive organ and bowed string instruments, especially viola da gamba. None of Heyden's instruments have survived to our time.

The only surviving instrument of this early stage of development was made in 1625, on the model of Heyden's *Geigenwerk*, by a Spanish craftsman, Fray Raymundo Truchado in Toledo. It is preserved in the Musical Instrument Museum in Brussels (illus.7).

Overall, around 200 instruments of this kind were built over 500 years in different places in Europe, some of them successfully, some of them not. Amazingly, almost all of them have been lost, so the history of the *viola organista*, known only to a few researchers, has not even found itself on the periphery of the interest of numerous circles dealing with early music.

Illus.6 Geigenwerk*, engraving from Michael Praetorius,* Syntagma Musicum *(1618)*

Illus.7 Geigenwerk *by Fray Raymundo Truchado (Toledo, 1625)*

There are two other surviving instruments from the 19th century, preserved in MIM in Brussels, a *Piano-viole* made by Lichtenthal in 1830 in Brussels (illus.8) and a *Piano–Quatuor* by Gustave Baudet built in Paris in 1873 (illus.9). These instruments have been restored in recent years and have been available to MIM visitors since 2018. Another one is preserved in National Museum in Nuremberg.

Illus.8 Piano-viole *by Lichtenthal (Brussels, 1830)*

Illus.9 Piano–Quatuor *by Gustave Baudet (Paris, 1873)*

The fact that the *viola organista* was rejected and forgotten, but every now and then someone returned to it before it fell into oblivion once more, was extremely motivating for me. It was a great challenge.

In my reconstruction work from 2009-2012 (illus.10) I followed three clues. The first was an idea about its sound; the second was an idea about the potential repertoire, which would have to be almost completely recreated; while the last one was an idea about the structure of the instrument.

Based on historical descriptions, and particular drawings of Leonardo, I wanted to refer not only to the early stage of development of the idea of the instrument shown in Leonardo's sketches, but also to take into account the forms of the instrument realized at the turn of

the 16th and 17th centuries. I also wanted to solve the problems mentioned in historical descriptions in connection with different realizations by various builders.

Illus.10 Viola organista *built by Sławomir Zubrzycki in 2012*

I thought that the sound had to be similar to the viola da gamba, but that it could also enter the range of the organ or wind instruments' tone slightly. Both gut and metal strings were used in past times. I used metal strings and eventually noticed that with the construction of the soundboard the sound is very similar to those made of gut.

We know the lutenist and music theorist Vincenzo Galilei played Heyden's *Geigenwerk* made in 1575, the first instrument built according to Leonardo's ideas. That instrument was sent to Munich in the hands of the master of the local orchestra, who was none other than Orlando di Lasso. German composer Leo Hassler knew the first or second instrument (made in 1600) of Hans Heyden, so at least those three musicians – Galilei, Lassus and Hassler - played and probably composed some pieces for the instrument made according to Leonardo's idea.

There are three important topics in the search for repertoire for the *viola organista*. The first interesting area is the music of the Italian Renaissance, starting with composers from the north who found themselves in Milan at the Sforza court at the time Leonardo da Vinci himself was employed by Prince Il Moro: Heinrich Isaach, Josquin des Prés, Jacob Obrecht and Alexander Agricola, and a little later Adrian Willaert and Orlandus Lassus. Subsequent generations contributed to the development in instrumental music, especially of keyboard music: Luzzasco Luzzaschi, Andrea and Giovanni Gabrieli, Antonio Valente, Paolo Quagliati, Marco Facoli and many, many others.

Secondly, it should be noted that a great deal of music of the 16th and 17th centuries was composed for a viol (da gamba) consort. The great 17th and 18th century French masters of the viola da gamba - Monsieur de Saint Colombe and Marin Marais, and the German Carl Friedrich Abel, created music full of moving expression, sensual and often at the same time entering into areas of mysticism. Such compositions as *Tombeau Les Regrets, Les Voix humaines,* are the best example of that.

Finally, we can point to one piece by Carl Philipp Emanuel Bach, which there is no doubt was composed for a specific bowed-string-keyboard instrument. We know that he wrote it for the instrument known in Prussia as the *Bogenklavier*, which was built in 1753 in Berlin by Johann Hohlfeld. Bach composed the Sonata in G major H280 after he had met Hohlfeld at the Prussian court. He familiarised himself with Hohlfeld's instrument and described it in his treatise on keyboard instruments, *Versuch uber die wahre Art das Clavier zu spielen*, expressing his regret that this instrument was so uncommon.

Bogenklavier, *Geigenwerk*, claviolin, hunched piano, bowed string piano, Lyrichord, *Piano-viole*, *Piano-Quatuor* – there are a lot of different names given by builders who very often thought their construction as the first in history. Each of them probably had only limited information on other instruments. Most of them wouldn't even have known of da Vinci's manuscript drawings, but they would have to have been aware of some of the previously made instruments.

At the beginning of my project of reconstruction of Leonardo's idea, I wondered what name I would use. I thought about the 'bowed string piano' for a while, but finally, I decided that *viola organista*, the name written by the hand of Leonardo da Vinci in one of his drawings, is most appropriate of all. It perfectly characterizes the instrument's sound.

Today, after additional research on the *viola organista* for the first book on the subject, which was written by me and my wife Magdalena and published in Poland in 2021 (illus.11), I must say that there is a clear line of development, starting with Leonardo da Vinci's drawings, through a series of historical realizations, all the way to our times. The priority of Leonardo's idea is difficult to question today, although not all later builders were aware of it. On the other hand, designs of the instrument included in sketches made with the hand even such a person as Leonardo da Vinci are not enough to attempt to reconstruct some music performance traditions on this type of instrument. However, the presence of names such as Galilei, Lassus, Hassler, C. P. E. Bach, and even Franz Liszt in the history of the instrument suggests that we can still discover a lot in this matter.

Illus.9 Viola organista *book cover (2021)*

Since 2013, I have played solo recitals on my *viola organista* at more than one hundred concerts and festivals in 20 countries in Europe and Turkey, always with great interest from the public (illus.12). In addition to solo activities, the *viola* also sounded along with the harpsichord and the 'Fissure Flute', which was also designed by Leonardo da Vinci. The Renaissance repertoire with a countertenor is also very interesting, and the repertoire with musette is currently being rehearsed. The possibilities for cooperation with other instruments appear to be very extensive.

Illus.12 Viola organista *recital at the Bucharest Early Music Festival*

In 2021, I built another copy of the *viola organista* (illus.13) that appeared at my concerts in 2022 and also took part in several CD recordings. Further plans assume that interested musicians will also be able to get to know the instrument. In my studio, preparations are also underway for further improvement of the structure and construction of new copies. There are also contemporary compositions intended for the *viola organista*. The premiere of Christof Dienz's *Concerto for Harp, Viola Organista, and Strings*, which will take place in Berlin this year, promises to be very interesting.

Sławomir Zubrzycki graduated from the Academy of Music in Krakow, and was then a Fulbright Scholar at The Boston Conservatory of Music. As a pianist, he has performed with many orchestras in the US and Europe, and he is also a composer and television presenter. Sławomir's instrument building includes clavichords and the reconstructed viola organista*, first heard in public in 2013 in Krakow. Website* www.violaorganista.com