Technology and Performance during the Renaissance

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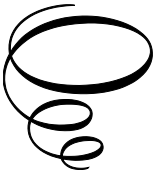
The Musical World of Leonardo da Vinci

By

Plinio Innocenzi

Cambridge Scholars Publishing



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The Musical World of Leonardo da Vinci

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To Tongjit, Jacopo and Lavinia,
my wonderful family

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NOTE TO THE READER

In compiling this book, I have selected some images from Leonardo's codices and edited them to make them easier to understand. However, the drawings have not been altered unless specifically indicated in the figure captions, e.g., some images have been mirrored. Leonardo's original figures can be easily visualized on the many sites that now reproduce the codices in their entirety in digital form.

The quotations have been translated into English; in the notes, the original text has almost always been quoted in order to have a direct reference to the translation, which is not always unambiguous in its interpretation, given the difficulty of understanding Leonardo's Italian.

Some names have been left in Italian, such as Ludovico il Moro.

PREFACE

EDOARDO ZANON
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The multidisciplinary nature of Leonardo da Vinci, combined with his extraordinary gifts as an observer of nature and the world around him, is frequently celebrated as one of his most striking characteristics. This aspect, more than any other, has contributed to creating the image of universal genius we all recognise: artist, engineer, architect, anatomist, poet, entertainer, and now musician.

In an era, the modern one, in which the specialisations of science and technology have achieved those extraordinary results that form the basis of our quality of life, it becomes legitimate to question the appropriateness of being represented in this way. Is it a real and concrete competitive advantage to concentrate such a large number of skills in a single individual without running the risk of being misunderstood as a great, fascinating, but perhaps not very useful, "all-rounder"? Could this thinking also make sense in a historical period like the Renaissance? An interpretation of Leonardo in the social and environmental context in which he lived and worked could contribute to enhancing our passion for him, probably by being corrected and less polluted by easy and frequent clichés. Professor Innocenzi's text, in this case, limited to Leonardo's relationship with music, will certainly help us answer these questions.

Leonardo was a celebrated figure and the object of attention even when he was alive; he was what today we would call a public figure. For this reason, it could sometimes happen that the stories that featured him took on a drift that I would describe as hyper-celebratory. For various reasons, interest in this incredible character has grown over the years and centuries, taking on ever greater dimensions until, in more modern times, it has reached an almost picturesque character. In commemorating him, we lose ourselves, from time to time, in fanciful tales to such an extent that we focus more on our narrative skills than on the actual subject we are describing.

It is all too easy and convenient at times to attribute to Leonardo the invention of a very long series of everyday objects: from the automobile to the tank, from the helicopter to the bicycle, to name the most overused. Some even go even further, attributing to him the invention of artifacts absolutely out of his time, the logic of production, and the context in which he lived. These are, in some cases, outright mystifications or media artifices, concocted with the sole objective of procuring fame for those who describe them, doing scant justice to his memory and his time, and disrespecting the public that reads or listens to them.

In this sense, I agree with the words of Filippo Taiani (Gentile, 1944) in his essay *Le grandi invenzioni* (The Great Inventions), who, when discussing great inventions, writes:

> *"around great inventions there is always a bit of international parochialism. Several countries want to take credit for having given birth to a different author of a famous invention. The ensuing literary quarrels are always inconsistent and sometimes fall into the ridiculous. The great invention is generally, let us repeat, a product of the times and the environment. There is usually very little merit, even if the inventor, real or supposed, is a man of great worth. Leonardo da Vinci owes his fame more to his intellect than to his inventions."*

Following Taiani's reflection on the various multidisciplinary areas he has spent time on, that of the musician Leonardo is probably the most significant. When Plinio Innocenzi, with whom I have long shared an interest and passion for Leonardo and especially for the way of telling his story, told me about his project, I was immediately won over. Music has always been a great protagonist in my life, first as the study of an instrument, then as a designer in reinventing the musical instrument I used to play, the guitar, to find myself more recently studying, reconstructing, and redesigning musical instruments designed by Leonardo himself.

Leonardo's musical projects have long caught my attention, and for several years now, in the *Leonardo3 Museum's Study Centre*, I have dedicated myself to research by collaborating with various luthiers in the reconstruction of many projects, many of which are unpublished and well-described in this volume. I must admit, with some regret, that in the past, we have been victims of Leonardo's hyper-communication, a weakness I have not resisted sufficiently, which has taken the form of improbable *Dragolires*; an extremely powerful object in attracting the public's attention but, at the same time, capable of concealing Leonardo's genuine relationship with music. The latter is a clear example of how starting from a supposedly

real fact, in this case, Vasari's famous tale, one can exaggerate in a communication that is more convenient than truthful. Professor Innocenzi devotes ample space to the description of the famous meeting between Ludovico il Moro and Leonardo and the episode of the famous lyre. I leave it to the curious reader to delve into the following pages.

The practice of amplifying an ordinary historical event to the point of transforming it into a legend is certainly not exclusive to Leonardo, and it is singular to point out that another project, also described by Vasari, presents the same critical issues: I refer to the mechanical lion. This is an incredibly complex machine and extraordinary in the description of what it was capable of doing: an automaton capable of walking, stopping in front of the King of France, and opening its chest to offer the lilies it contained as a gift, but for which, precisely as for the famous musical instrument designed and made for the Duke of Milan, we do not have any precise drawings available.

The objective data alone would support the validity of the doubt, also considering that in the year of Leonardo's death, Giorgio Vasari was still a young boy, and it is difficult to imagine him engaged in the first drafting of his Lives. However, it would certainly be a grave mistake to nullify the value of such a clear and precise testimony as Vasari's, even if it is probably fictionalised. After all, the manuscripts that contained these drafts may well have been lost. The fact remains that neither Professor Innocenzi nor I are the only ones to raise some concerns. Augusto Marinoni, one of Leonardo's greatest historians, wrote:

> "Vasari is a later witness and perhaps repeats what he heard. It may be that Vasari knew of some drawings by Leonardo similar to those that close the *Codex Ashburnham 2037*, and especially of that stringed instrument mounted on a monstrous head, a mixture of goat and bird." (in *Leonardo, la musica e lo spettacolo*, Raccolta Vinciana XXII - 1978)

The organologist Marco Tiella adds:

> *"It is singular that the documentation of organological interest left by Leonardo has been, at least in part, polluted by fanciful suppositions repeatedly reported in the specific literature. The organological documentation found in Leonardo's manuscripts consists of a certain number of inventions united by the intent to mechanise existing instruments, or more appropriately, to clothe the concept of the mechanism with a structure of musical utility. (in The Musical Instruments Designed by Leonardo)."*

We owe it to our readers to offer them food for thought on certain events in history that saw Leonardo as a protagonist, without questioning that they really happened but rather reasoning on the most probable ways in which they occurred, without ever forgetting a principle that Leonardo himself dictates to us: Without doubt, such proportion is from truth to lie, as from light to darkness (*Codex on Flight*, f. 11r).

In reconstructing various projects for musical machines, I have often had to deal with different master organ builders and luthiers. I like to imagine that this happens little differently from what might have happened in a workshop in the 1500s. In these circumstances, one soon realises how difficult it will be to pass on knowledge of Leonardo and these incredible artisans to the public, be it a visitor to an exhibition or a book reader. Nevertheless, we strive with all our strength and passion to transfer as much of what we know as possible, knowing, however, that this will not always be possible. In this sense, however, reading Plinio Innocenzi's text is always enriching, especially in terms of the historical context, stimulating ongoing research, study, and investigation and finally shedding light on Leonardo's relationship with the musical world of his time. Nevertheless, what elements identified a musician in Milan of Renaissance time? Enlightened by this volume, let us try to visualise, for a brief moment, Leonardo engaged in his performance before Ludovico il Moro. Let us imagine him harnessing his unprecedented instrument, designed and made by him. Let us imagine him in probably one of Europe's most advanced, modern, and wealthiest cities in 1500. Next to Ludovico were present, as they must certainly have been, the most important musical authorities, as well as artisans, ready to judge and compare their many years of experience with that of the newly arrived Leonardo. Would this incredible combination of skills, which we are so accustomed to, of entertainer, improviser, perhaps composer, designer, engineer, architect, singer, performer, even luthier, and, as if that were not enough, also an excellent painter, really have had the strength to impress, solely on a musical level, such a sophisticated audience?

Deprived of his context, his time and his potential competitors, such as the composers and performers who orbited Ludovico's court, amply described in Professor Innocenzi's text, Leonardo appears to us as a giant hoisted at the centre of a stage but surrounded by nothingness and for this reason difficult to judge.

I, therefore, find myself perfectly aligned with the idea recounted in the volume regarding the total absence of evidence certifying Leonardo's abilities as a composer and musician, even though I am equally convinced

that he would have greatly desired to acquire those musical skills and knowledge that were, to use Pliny's words, out of his reach. The book reminds us in a precise and timely manner how music in the Renaissance was undergoing a profound transformation towards increasing complexity on the harmonic and compositional planes and art taken seriously. To be more explicit, in the Milan of the 1500s and Ludovico il Moro, one could not improvise either as a musician or a luthier, let alone both at the same time.Could it not seem more realistic to describe Leonardo for what he probably really was? An excellent painter, an engineer potentially useful to the advancement of technology, a great observer and witness of the world around him, an incredible draughtsman, the latter aspect for which he should be most celebrated, and, on top of all this, also a man who loved to dabble in singing while accompanying himself with a lyre, perhaps customised in its aesthetics, from his arm? Could it not have been precisely this that struck a chord in Ludovico's court? An incredible painter, engineer, designer who could also play and sing?

Observing him in this way, we could finally re-engage with the genius of Leonardo in a more human and, for that very reason, even more, fascinating guise. A Leonardo who understood the quality and importance of the music of his time and tried to contribute according to his prerogatives as a designer, which were exceptional and truly special. A Leonardo who could count on the ability to understand and improve on the weaknesses of a violin maker's workshop, which was almost always limited by its own building traditions. A Leonardo who was able in a short time to appreciate the sonorous qualities of one or more instruments by imagining them fused into a single instrument. A Leonardo who was able to identify the constructive, functional, or logistical problems associated with an instrument such as an organ, a drum, or a trumpet and be able to resolve them in drawings little larger than a postage stamp, anticipating ideas and technical solutions by centuries. A Leonardo capable of inventing novel musical instruments that probably never saw the light of day except in his notebooks. A Leonardo also moved by the human interest in seeing one of his projects finally realised.

Aided by Professor Innocenzi's work, we have the chance to attempt a fascinating exercise of imagination and place him on the same stage as previously proposed, surrounded by his intuitions as they materialise one by one at his side. Let us try to imagine him describing his projects to the audience of his time. At times he himself would have invited those present to an effort of imagination and tried to make them understand with overwhelming enthusiasm how this or that particular mechanism, although

still to be perfected, had great potential. Some machines might have amazed and inspired an unusually far-sighted luthier, willing to break with his own building traditions to invest in one of the projects that this exciting inventor from Florence was proposing with such passion. It is nice to dream that something similar might have happened, but unfortunately, no written testimony has reached us.

ABBREVIATIONS

BAM	Biblioteca Ambrosiana, Milan (Italy)
BIF	Bibliothèque de l'Institut de France, Paris (France)
BL	The British Library of London (UK)
BML	British Museum, London, (UK)
BNE	Biblioteca Nacional de España, Madrid (Spain)
BNF	Bibliothèque Nationale de France, Paris (France)
BRT	Biblioteca Reale, Turin (Italy)

INTRODUCTION

Artist, engineer, inventor, and scientist are the activities and talents for which Leonardo da Vinci is famous. There is, however, another aspect of Leonardo's personality that is a little less well-known but, in some ways, makes him even more fascinating and mysterious, his musical talent. This is a largely unacknowledged activity, yet it was of great importance to Leonardo, who was an outstanding performer, as indicated by the numerous testimonies of his contemporaries who highly valued his ability as a musician. He was renowned for his live playing skills and was an outstanding player of *lira da braccio* with an extraordinary capacity for improvisation[1].

His interest in music, however, went far beyond that of a mere performer, even if very talented. Leonardo, as was his habit, approached the world of music and musical instruments without being trapped in a well-defined mental enclosure. He was certainly a musician and entertainer, he played an instrument with great skill, but we only know a little else because the few available sources merely emphasise his ability as a performer. The appreciation of Leonardo as a musician by his contemporaries is probably also due to his refined manners, his legendary beauty and the magnetic charm exerted by his personality.

However, Leonardo's musical world is very different, as is to be expected from his character. Besides being a performer, he was interested as a scientist in understanding the properties of sound and as an engineer in the construction of innovative musical instruments. Leonardo did not invent the violin or the transverse flute. Still, he certainly had remarkable intuitions, which, like all his scientific and engineering work, remained hidden among the chaotic notes collected in the many notebooks that unfortunately went largely missing after his death. This book also aims to tell the story of Leonardo as a musician by showing, as far as possible in an organic manner, his visionary intuitions well ahead of his time.

The figure of Leonardo has become an international icon, as have his most famous works, the *Mona Lisa*, the *Last Supper*, and the *Vitruvian Man*.

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[1] Winternitz E (1982) *Leonardo da Vinci as a Musician*. Yale University Press.

In the collective imagination, Leonardo is the man who invented everything and anticipated the future with genius and great insights. Specialist studies have contributed to the creation of this almost mythical figure, but in many cases, on the basis of a partial representation of the general context. As a result, they ended up, albeit unintentionally, creating a separation between Leonardo and his contemporaries. Instead, Leonardo is, above all, the son of his time, of that extraordinary and unrepeatable moment that was the Renaissance. Without the mathematicians, philosophers, musicians, humanists, architects, and engineers who had made a fundamental contribution to the Renaissance and created a culturally sophisticated and refined environment in Italian cities, Leonardo could never have become the dreamer and artist we know.

Pierre Duhem[2], one of the pioneers of Leonardo studies wrote on this subject:

> "*Great discoveries are always the fruit of slow and complicated preparation, pursued over centuries.* [...] *An overly simplistic history makes us admire one of the giants born by spontaneous generation, incomprehensible and monstrous, a better informed history is capable of tracing the long filiation from which they come.*"[3]

To decontextualise Leonardo is to reduce him to an isolated genius, not to recognise his application as a scholar, as a man who wanted to know everything and, therefore, read and collected books[4][5], consulted libraries wherever possible, and did not miss any opportunity to discuss with the most brilliant minds of his time from whom he eagerly acquired knowledge. Ladislao Reti[6], in 1964, when the myth of Leonardo was beginning to take hold in the media, wrote:

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[2] Pierre Duhem (1861-1916) was a multifaceted French scientist, philosopher, and scholar of the history of science and theoretical physics, particularly thermodynamics, hydrodynamics and elasticity theory. His contribution to the history of science is collected in *Le système du monde: histoire des doctrines cosmologiques de Platon à Copernicus* published in 1914.

[3] Duhem P (1906) *Estudes sur Leonard de Vinci*. Paris. Librairie scientifique A. Herman. Pages 1 and 2.

[4] Vecce C (2017) La biblioteca perduta. I libri di Leonardo (The lost library. Leonardo's books). Salerno Editrice.

[5] Vecce C (2021) La biblioteca di Leonardo. (Leonardo's library). Giunti. Florence

[6] Ladislao Reti (1901-1973), a chemist by training, was one of the pioneers of Leonardo studies, see for example: Reti L (ed.), (1974) *Leonardo*. Arnoldo Mondadori Editore, Milan,

"*Countless superficial articles, accompanied by reproductions of drawings that are not always relevant or correctly interpreted, have created the myth of Leonardo's genius that anticipates all inventions and all discoveries in science and technology"*.[7]

Read in the right light, Leonardo represents a true treasure trove. His enormous volume of notes and observations has enlarged our vision and comprehension of his time. A time when scientific and technological knowledge had already made tremendous signs of progress, so much so that they enabled almost impossible enterprises such as the construction of the Dome of Santa Maria del Fiore in Florence by Filippo Brunelleschi (1377-1446). I dedicated my previous book to this topic: *The Innovators behind Leonardo. The true story of the scientific and technological Renaissance*[8], in which I tried to represent for a non-specialist audience the many connections of Leonardo the engineer and machine designer with both his predecessors and contemporaries. Again quoting Reti, understanding the true nature of Leonardo's work requires the humility of separating oneself from the clichés created over time around his figure and looking at it from the right perspective:

"[...] *his manuscripts contain, in addition to the preparatory material for original treatises that unfortunately remained unfinished, an infinity of notes derived from reading books and manuscripts and, especially, from observing the manufacturing activities of the time and exchanging ideas with scholars, artists and craftsmen*."[7]

For many of his studies of machines, Leonardo was largely inspired by the work of the famous Sienese engineers Mariano di Jacopo, known as Taccola (1381-1453) and, above all, Francesco di Giorgio (1439-1501), whose beautiful copy of his *Treatise on Civil and Military Architecture* came into his possession and where his autograph notes have been identified in the margins. The Sienese engineers, unlike Leonardo, produced accomplished full treatises on the engineering of machines and innovations of all kinds. Many of these machines and technologies can be found in Leonardo's notes. It is, therefore, difficult to fully discern, as Reti points out, the originality of Leonardo's work when compared to the knowledge of the time. Nevertheless, his research on the principles of flight and the

[7] Reti L (1964) Tracce dei progetti perduti di Filippo Brunelleschi nel Codice Atlantico di Leonardo da Vinci. (Traces of Filippo Brunelleschi's lost projects in Leonardo da Vinci's Codex Atlantic). IV Lettura Vinciana. G. Barbera Editore.
[8] Innocenzi P (2019) *The Innovators Behind Leonardo. A true story of the scientific and technological Renaissance.* Springer International Publishing.

development of flying apparatuses undeniably constitutes a unique contribution that distinguishes him from his contemporaries. Similarly, the multifaceted Renaissance architects, engineers, and artists did not show, like Leonardo, a particular interest in musical instruments and innovations in the field, even though many of them were excellent musicians. Passion for music and flight are thus two distinctive traits of Leonardo's personality.

His interest in the manifold possibilities offered by music, as well as his interest in flight, were fully realised during Leonardo's stay in Milan. Leonardo's Milan is a unique place. The Sforza family transformed the city into one of the centres of the Renaissance and devoted such special resources and attention to music that the ducal court became the main musical centre of Europe[9,10]. The Ducal Chapel was unrivalled in size and quality of singers. Leonardo was certainly well introduced into the refined musical world of Milan. He was a friend or at least acquaintance of one of the most famous composers and musicians of the time, Franchino Gaffurio[11], perhaps the young musician who appears in one of Leonardo's few portraits and the only one of a male subject.

Together with Gaffurio, a brilliant composer and music theorist, the Sforza succeeded in attracting the best talents of the time from all over Europe, including Josquin Desprez[12,13] (1450 - 1521), described as the Michelangelo of music in the Renaissance, Jean Mouton (1459 - 1522) and Gaspar van Weerbeke (1445 - after 1516), among the leading exponents of the Franco-Flemish school of music then predominant in Europe. This school, starting with Guillaume Dufay (1397 - 1474), Johannes Ockeghem (1410-1497), and Iohannes Tinctoris (1435? - 1511), had represented the reference point for polyphonic contrapuntal music both compositionally and theoretically. The influence of this school in Italy had been profound thanks

[9] Daolmi D (2010) *L'invenzione del sangue. La polifonia e il ducato sforzesco* (The invention of blood. Polyphony and the Sforza duchy). In: Leonardo da Vinci: Il musico. Edited by Pietro C. Marani. Silvana Publisher.
[10] Merkley P, Matthews Merkley LL (1999) *Music and Patronage in the Sforza Court*. Brepols,
[11] Fano F (1970) *Vita e attività del musico teorico e pratico Franchino Gaffurio da Lodi* (Life and activities of the theoretical and practical musician Franchino Gaffurio da Lodi), in *Arte Lombarda*, anno (year) XV, no. 2: 49-63.
[12] Fiore C (2003) *Josquin des Prez*. L'EPOS, Palermo.
[13] Rostagno R (Ed.) 2021. *Josquin Desprez. Il signore dei suoni del Rinascimento tra storia e leggende.* (Josquin Desprez. The Renaissance gentleman of sounds between history and legends) Il Sole 24 Ore.

to the presence of the Franco-Flemish masters, for long periods active in various cities of the peninsula.

In their ambition to make Milan one of Europe's music capitals, the Sforza spared no expense in attracting the best musicians. The generous remuneration they could offer was extremely attractive. They organised several missions throughout Europe with the aim of convincing the most famous active musicians to move to the Milanese court. Leonardo, therefore, found himself living where music, plays, and performances had a central role in the life of the court and the city itself. Thanks to Galeazzo Maria Sforza (1466-1476), the Ducal Chapel's founder and the elder brother of Ludovico il Moro (1452-1508)[14], Milan became one of the most important musical centres in Europe. At that particular moment in history, music, like the other arts, was not only a form of entertainment but was used as a political instrument of self-celebration and representation of the greatness and power of the household.

Creating and organising a musical chapel was a rather arduous task and required much effort and resources. Polyphonic music, mostly of a sacred genre, of complex writing and great performing difficulties, required high-level composers and chapel masters for its performance. At the same time, experienced cantors and the establishment of a formal music school where musicians had to be trained from a young age were required. Only a few centres on the Italian peninsula could succeed in this endeavour also because the competition was extremely fierce. Milan had to compete for masters and cantors with Ferrara, Mantua, Naples, Rome, Florence, and Bologna, for whom musical chapels represented, as for the Sforza Duchy, a sign of court magnificence, ambition, power, and cosmopolitanism. In comparison with the present, one can think of the resources required to run and maintain a large opera house or symphony orchestra; not many cities are able to do this due to both costs and the difficulty of attracting talent and creating stable music schools at the highest level.

Ludovico il Moro picked up the legacy of his brother, the founder of the Ducal Chapel, and devoted himself to bringing back to Milan the cantors who had left the city and dispersed after his brother's murder in 1476. In this context, Leonardo's presence in Milan takes on a particular value for Ludovico il Moro. Leonardo was not only an artist and engineer but also

[14] Ludovico Maria Sforza, also known as Ludovico il Moro (the Moor). He was only the fourth son of Francesco Sforza, the dynasty's founder, but was able to rule the dukedom of Milan before as the regent of his nephew and after as the Duke.

one of the most renowned improvising musicians of his time and a famous player of *lira da braccio*. When Leonardo was sent to the court of Milan by Lorenzo the Magnificent (1449-1492) on an ambassadorship. According to Giorgio Vasari, he beat the other participants in a singing competition and carved out an essential role for himself in the Milanese court. His skill as an entertainer and his talent as an improviser of compositions on the *lira da braccio* probably contributed to Ludovico il Moro's acceptance of him at his court in Milan. Ludovico Sforza, like his brother Galeazzo Maria, was constantly on the lookout for the best musicians, and Leonardo, at least as far as the *lira da braccio* was concerned, was probably among the most talented that could be found. This skill in music, together with his boast that he could make the equestrian statue of Francesco Sforza (1401-1466), father of Ludovico il Moro and founder of the dynasty, helped to make Leonardo an appreciated guest at the Milanese court even though his reputation as an artist in Florence was not so solid, due to the fame of never completing his works.

As far as his role in the musical sphere of the cour, we must consider him an excellent performer, not a composer or music theorist, and he certainly could not compete with the master cantors of the Ducal Chapel or the Musical Chapel of Milan Cathedral. The only field in which he could make an original contribution was instrument making, even though he was not a master luthier. Understanding the complex work on music theory by Franchino Gaffurio, who was trying to go ahead the Franco-Flemish musical tradition, was beyond his reach. Leonardo limits himself in the *Paragone* (*Comparison*) to entering into the diatribe on the primacy between the arts. This an academic question of little relevance seen in retrospect, considering that music was going through a profound transition in writing and technique at that time.

The Sforza's interest in music also promoted the feverish activity of master lute-makers who had to meet the growing demand for quality instruments. The Milanese court was, therefore, looking not only for the best musicians but also for the most talented masters capable of making musical instruments. Among Leonardo's acquaintances was Lorenzo Gusnasco (1470 (?) - 1517) (also known as Lorenzo da Pavia), probably the best master luthier of the Renaissance, who was highly sought after in the Italian courts for his refined musical instruments, which were also highly aesthetically pleasing.

On the other hand, the subject of musical instruments is often recurrent in the many pages filled with notes and drawings left by Leonardo, even if,

as for the rest of his varied interests, he has not left behind any completed treatises on the subject; indeed, the notes are fragmentary and difficult to understand. Leonardo, as was his habit, carefully observed the world around him. He took note of the instruments and the use musicians made of them, studied and understood their workings with extraordinary insight, and, above all, anticipated their evolution, in many cases foreshadowing the possibilities of their future development. Once again, his vision as an engineer leads him to tackle problems in search of a practical and innovative solution, for example, how to produce sounds with continuity or make an organ play without resorting to external help in blowing air. Leonardo's interest in musical instruments, as emerges from his Codices, was focused on something other than expanding the expressive range of sonority. He was rather concentrated on exploring the possibility of reproducing music using newly developed systems, in some cases more akin to musical machines than actual instruments. What emerges from an analysis of his writings is the point of view of an engineer rather than a musician. At the same time, his scientific interests led him to become interested in acoustics, the origin and diffusion of sound, and how to control its emission. The emission and propagation of sounds fascinated Leonardo so deeply that he devoted several studies to bells, drums, and how to control the sounds they emitted.

Leonardo's musical world appears varied and reflects his times, the Renaissance courts, and the concept that entertainment was also a form of art. However, his interests in the subject are of a different nature, testifying once again to a personality that is never enclosed within a narrow framework. Leonardo is also a witness to a moment of transition between the old world, whose Greco-Roman and medieval roots are still deep, and the modern world. This transition is visible in many areas of Renaissance society. One example is that of war machines, to which Leonardo also devotes much attention, boasting an ability as a military engineer that is probably nothing more than theoretical. His studies of war machines include traditional instruments such as mangers, catapults, and trebuchets well as newly developed ones such as bombards and cannons. A world in transition in which the new has yet to completely supplant the old. In most of the Renaissance engineers and their treatises, this moment of transition is captured, which also marks the advent of innovative technologies that would soon supplant the traditional ones. In the field of music, it was going on something very similar, traditional and popular instruments such as the hurdy-gurdy, the lira da braccio, the bagpipe, the psaltery, and the monochord were evolving to become more and more complex and respond to the need for combined use, to accompany polyphonic singing or to perform instrumental pieces.

The musical instrument used by Leonardo is not coincidentally a lira da braccio, which well interprets this particular moment of transition between instruments of medieval and modern origin. The lira da braccio is, in fact, a more advanced version of the vielle and will, in turn, evolve into the violin and viola. One can discern an attempt to go beyond the known and commonly used instruments in Leonardo's scattered notes, suggesting new solutions and possibilities. In Leonardo, the combination of different skills, such as those of an engineer, scholar, and musician, creates an interesting combination in which his anatomy studies and the physics of sound, among other things, mingle.

Leonardo imagined a new musical world consisting of more complex and advanced instruments with sounds possibly closer to the human voice. Another important motivation for designing new musical machines was his pleasure in surprising the participants at court parties and theatre performances, of which he was a great organiser. Designing new musical instruments was undoubtedly a way of creating fascinating and unusual atmospheres through different sounds. Once again, studying Leonardo serves to guide us along a path of knowledge and explore a partly unknown lost world.

The book has two parts, the first dedicated to an overview of Leonardo's musical world in the context of his time, the second to Leonardo the 'engineer' musician, where his passion for machines finds a happy marriage between the innovation of musical instruments and the invention of highly original organology mechanisms. Earlier studies by Emanuel Winternitz[15] (1898-1983) first brought to light the contribution of Leonardo as a musician. In the meantime, new studies of the sources, as well as impressive work on reconstructing or reinventing the instruments designed by Leonardo, have made it possible to obtain a new, more accomplished vision, especially of the technical side. This book is intended not only for the scholars in the field but more in general to those who, through Leonardo, can hopefully cast their eyes over an extraordinary historical period during which music was a pleasant companion of everyday life and where the various arts merged and met to make the present acceptable and the future full of hope.

[15] Kopp LH (2004). Music Forgotten and Remembered: The Life and Times of Emanuel Winternitz. Music in Art: International Journal for Music Iconography. 29 (1-2): 6-13.