FROM THE FOREST TO THE CONCERT HALL

Research Paper by Anna Lachegyi

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Research question:

Does acquiring technical and practical knowledge in the art of bow design and construction between the 16th-18th century affect my musical decisions?

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Introduction

Personal motivation for the research

Since I started my university studies of the viola da gamba, I have been in a constant search of bows. I was always told that having a good bow is as important as having a good instrument, or that having the right bow will change my way of playing – or simply just that I should change my bow. Having these comments in mind, for years I felt very uncomfortable playing with my bow, without knowing exactly what was wrong with it or what I should look for. First, I did not know any historical background information about bows. So, as a viola da gamba player playing music from Rognioni to Abel, which kind of bow should I look for? How many bows should I have? Can I have one 'magic' bow and play all of the gamba repertoire, spanning more than 200 years, with it? Or does it make a difference in my way of playing Simpson if I have a bow similar to the one that Simpson describes in his book? What about having a clip-in frog bow instead of the screw mechanism?

Another factor is in the technical details. I could not be satisfied judging a bow just by its feeling. I wanted to know what aspect about its design makes it better or worse. Details like the flexibility, hair-tension, weight, length, balance, quantity of the hairs, the type of wood, the height of the frog, etc., are all factors a bowmaker considers.

I decided therefore to spend these two years exploring this topic, discovering what the treatises and contemporary researchers have to say about it. I also started to make bows myself, in order to have the most nuanced and multifaceted understanding of this subject that I could.

To my colleges

I hope that with this research I can motivate other musicians to think more critically about the equipment they use every day. I hope that through the information I collected about the history of the bow, one can see how diverse it was in its shape, length and structure - and that one can also use the information when choosing a bow, or just for thinking about a musical solution.

CHAPTER I

The bow through the centuries

"It has always appeared to me a curious thing that the bow, without which the fiddle could have no being, should have received so scant attention, not alone from the community of fiddles, but also from writers on the subject." [1]

The more I wanted to dig into the topic of bows and bow-making before the 1750s, the more I agreed with the aforementioned quote from Henry Saint-George. There is almost no record of bow makers' names, list of bows, or books which deal with this topic. Does it mean that bows were not appreciated as much as instruments? Or that the quality of the bow was not important at all? Was the bowmaker and the instrument maker the same person?

In this chapter I will give a short overview of the most important stages of the development of bows until the middle of the 18th century and the model of Tourte.

It is often difficult to determine the precise origin of a particular instrument. Determining the provenance for bows is even more challenging. It was only during the 18th century that bows started to be branded, so before that it is difficult to identify the maker. They are too thin to have proper dendrochronological research – and it is very difficult to establish the instrument for which the bow was originally intended. [2]

Writers of music treatises from the 16th-17th, even 18th, century often neglected or did not find it necessary to go into details about instruments because they found it too obvious to discuss. Even less is written about the bow, until the major changes in the 18th century. The ones who wrote something often had to rely on speculation due to a lack of information. [3]

However, we have some sources to start with: some bows have survived the centuries and can be observed in the collection of museums or private owners. Although some bows were adjusted to the requirements of the later decades and players (for example having a screw-frog added instead of the original clip-in frog), they give us the most accurate information about the wood that was used, the length and curve of the stick, and the shape of the head or the flexibility and balance point. Another important and rich source is iconography. In paintings, we can follow the main characteristic changes of the bow throughout the centuries and regions, as well as the diversity of the bows - iconographic material shows us the coexistence of different bow lengths, shapes, frog systems and bow grips.

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[1] Henry Saint-George: The bow, its history, manufacture and use

[2] Hoffman: *The viola da gamba*

[3] Seletsky: *New light on the old bow: 1*

Sixteenth century

Our knowledge of 16th century bows depends completely on iconography. We have no preserved bows from this period, because when these bows could not fulfill the requirements of the developing technique, it was easier to make a new one than to adapt the old one to the changing conditions.

Although they varied widely in length and shape, bows of all string instruments had a common characteristic: the curve of the stick was mainly convex, sometimes straight, but never concave. The degree of the curve was more significant earlier in the century and started to decrease in the last decades. Attaching the hair to the stick was solved in very simple ways before the hole-wedge system that we use today (in modern and in period bows as well). Paintings from the previous century already show two ways of inserting the hair: one is to make a hole through the stick, put the hair in and stabilize it with a knot - the other method is to simply tie the hair around the stick.

Left: Domenico Bartolo: *Madonna of Humility* (1433)[4]

Right: Valentin Montoliu: *Hermitage of St. Feliu* (ca.1475-85)[5]

[4] Domenico de Bartolo (144-1445): Madonna of Humility by. Collection: Pinacoteca Nazionale
[5] Valentin Montoliu: Virgen de la leche. Hermitage of St. Feliu in Xátiva, Spain.

If the curve of the bow stick was sufficient, the distance between the hair and the stick became large enough to play. This big curve, however, made controlling the bow and playing with clear articulation very difficult, and for this reason the bow stick gradually became straighter (but still with a convex curve). In order to maintain the distance between the hair and the stick, little nuts were inserted to the lower part of the bow, and the same small nut or an extra 'head' was added to the tip.[6] These nuts could be clip-in, just held in place by the hair tension, or there are examples for fixed frogs as well, made together with the stick. (See painting by Lorenzo Costa).

Left: Hans Memling: *Angel musicians* (ca.1480)[7]

Right: Lorenzo Costa: *A Concert* (ca. 1495)[8]

Rafael: *St. Cecilia* (1514)[9]

[6] Boyden: The history of violin playing
[7] Hans Memling (1433-1494): Angel Musicians. Collection of Royal Museum of Fine Arts, Antwerp.
[8] Lorenzo Costa (1460-1535): A concert. National Gallery, London.
[9] Raphael (1483-1520): The Ecstasy of St. Cecilia. Collection of Pinacoteca Nazionale de Bologna.

Paolo Veronese: *The wedding at Cana* (ca. 1562)[10]

[10] Paolo Veronese (1528-1588): The Wedding at Cana. Collection of Louvre Museum.

Seventeenth century

"*By about 1625, owing to rapidly developing technique, players of string instruments began to require, more sophisticated, better balanced bows for clearer articulation, increased volume and a more complex sound."*[11]

There are extant early bows which show a solution to the balance problem: an extra ornamental cap of ivory or bone is placed on the tip as an extension. [12]

Judith Leyster: *Carousing couple* (1630)[13]

Those simple forms of hair attachments of the previous century were also not uncommon in the following centuries' iconography, and probably stayed in practice for a long time in folk music. However, in search of a more suitable solution to fulfill the technical requirements of the player, the tip thickened into a 'pike-head' circa 1625, which made it possible to cut a little hole. The hair was knotted and placed into this hole and it was secured with a tightly fitted wooden plug. The same was done at the end of the stick, and the nut was placed and held there by the tension of the hair (clip-in frog).[14]

The 'discovery' of America and expanding trade relations with Asia had a big effect on the style of playing on European bowed instruments. Snakewood became the most popular choice of wood, but ebony or ironwood were also used. We can find references to exotic woods in contemporary sources, although it is not always clear what they meant by the names. Danoville says the "The wood must come from China" and Jacob Steiner refers to "Indian wood." Rousseau, however, claims that European woods can also make good bows. [15]

Snakewood, which grows in northeastern South America, and it is very rare and extremely expensive. It is one of the heaviest woods and is exceptionally long-grained, which makes it very elastic and flexible

[11] Seletsky (p.286)
[12] Two in Kunsthistorisches Museum of Vienna, their caps missing; the other is intact in Copenhagen's Claudius Museum
[13] Judith Leyster (1609-1660): Carousing couple. Collection of Louvre Museum.
[14] Seletsky
[15] Hoffman

lengthwise, but its torsional strength is considerably lower, so very long bow sticks can be made from it which are extremely delicate at the tip without lacking strength.[16] Ebony and ironwood are very elastic but lacking a bit of strength, so sometimes they made thicker and heavier bows, or bows intended for larger instruments.

Regional differences in types of music account for differences in types of bows as well, and 17th bows were still far from being standardized in shape, length, or appearance. Seletsky suggests that according to the iconography sources, there is an aesthetic preference for matching the length of bows with their instruments: while violin bows are much shorter than in the 18th century, bows of the violone, viola da gamba or bass violin are remarkably longer. The bows shown in Mersenne's *Harmonie Universelle* and Praetorius' *Syntagma Musicum* (the two most encyclopedic sources on instruments in the century) confirm this theory, demonstrating that violin bows were not longer than the body of the instrument. The bow stick was generally cut straight and bent by the hair tension, giving a slightly convex curve to it. The hair was well separated from the bow stick at the frog, but at the tip the hair and the stick met in a point, because of the lack of a distinct head. To make the distance more acceptable, the stick was probably heated and bent slightly outside in the upper few centimeters. This increased height between stick and hair made the bow very flexible and responsive, even in its upper third. [17]

The clip-in frog remained in use throughout the 17th century. The tension problem of the clip-in frog system can be helped by having a second frog with a deeper or shallower groove for the hairs, and a short piece of gut string (or leather) pulled back between the hairs and the frog. A late seventeenth-century experiment for tension adjustment is the *crémaillére.* In this system, the hair is attached to the frog which is suspended and regulated by a metal ring on the notches of a toothed rack. For some reason, the *crémaillére* did not become very popular among musicians, and the clip-in frog remained the preferred choice until the more widespread adoption of the screw mechanism in the second half of the 18th century.

Eighteenth century

In the violinist's world, long bows did not replace short bows until the middle of the 18th century – many great soloists were very satisfied with their short bows, but thanks to the experiments of bow makers (and musicians), the bow continued to evolve very rapidly. Already in the first decades of the century, the bow stick tended to lengthen and to straighten, and a few bows already had a concave curve. The head became more elevated to keep a better distance between the hair and the stick (the so called swan-head), replacing the small added convexity in the upper few centimeters.[18]

The aesthetic ideal of matching bow lengths to their instruments was no longer common, thus the violin bow became longer than the cello or the viola da gamba bow.

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[16] Otterstedt: The viol
[17] Seletsky
[18] Seletsky

While the clip-in frog was still the most commonly used, the long bow's increased hair span probably made it too sensitive to changes in humidity and required an easier hair tension adjustment. [19] The screw-frog mechanism appeared around 1750, but it came into practice gradually – apparently the hair-tension problem did not seem critical enough for a lot of musicians to undertake the extra cost of the screw.

Although musical and technical requirements necessitated some of these changes and alterations to the bow throughout the first half of the 18th century, the lengths of the bows still varied greatly, even within regions.

Further development of the bow's design was pioneered by Francois Tourte, the namesake of the modern bow we know today. He standardized the length of the violin bow at around 75 cm and the viola and the cello bows a bit shorter. He discovered an ideal combination between the modern, higher head and the concave curve of the stick. He established Pernambuco wood as the ideal material for the bow. The higher, more massive head changed the balance of the bow, which he corrected by putting inlays in the nut. To make the hair lie perfectly flat during playing, he introduced the ferrule at the frog.[20]

[19] Seletsky
[20] Boyden

CHAPTER II

Historical sources

In this chapter I will give an overview of the viola da gamba bow's construction during the 16th-18th centuries. My main questions are:

Where can we find information? How reliable is this information? Which sources can bow makers use for creating the model of their bows?

What can we find in the treatises?

As seen in the previous chapter, when it comes to written information about bows before the middle of the 18th century, we do not have much. In the case of viol bows, we have a few sentences about the wood, or the use of black or white hair in texts written on how to play the viola da gamba, but nothing very specific. The most important information is given in *The Division Viol* by Christopher Simpson, which mentions the exact length of a bow for a division viol. It is important to mention that all the methodological texts of this time were written mainly for amateur players, and not for professional musicians. The writers' aim was to sell their books to wealthy amateurs – they had the leisure time to learn music, and also hosted their own private concerts, had the capital to buy great instruments, and could afford to pay the masters for music lessons. Books (in most cases) were not written for training musicians for the profession. While examining these treatises, it is important to keep in mind that they might not give the whole picture about the music scene of the time.

Most of the treatises just briefly mention the bow before they write about the right-hand technique or write just half a sentence before going into detail about the instrument. Here is the information I found by topic:

Wood

Danoville: "It is necessary that the wood be from China"[21]

Rousseau: European woods can also make good bows. [22]

Hair

Danoville: "For bows, white hair is the sweetest."

Rousseau: "white hair has a sweet sound and it is more durable which is good for treble; for the bass bows can work better with black hair which articulates more."

[21] Danoville (1687) L'Art de toucher le dessus et le basse de violle, Paris
[22] Rousseau, Jean (1687) Traité de la Viole. Paris

J.Quantz: "The bow intended for ripieno playing must also be stronger, and must be strung with black hairs, with which the strings may be struck more sharply than with white ones." [23] For ripieno playing, he also recommends larger instrument with thicker strings which requires the stronger bow and black hair.

Loulié: suggests around 60-80 bow hairs, but later corrects this number to 50-60 (!).[24]

Mersenne: a violin bow should have 80-100 hairs. [25]

Frog

Simspon: "The nut, short. The height of it, about a finger's breadth, or little more." [26]

Measurements, Weight:

Danoville: "…not too heavy, not too light – because then it would not draw out enough harmony – but a weight proportioned to the hand. That is why I leave that to the choice of him who plays the Viol."

Simpson (about bow for the division viol): "A viol-bow for division should be stiff but not heavy. Its length (betwixt the two places where the hairs are fastened at each end) about 27 inches."

From this very minimal information, we see that around the middle of the 17th century, 'exotic' woods were already used for bows, though not exclusively. Similar to the case of the clip-in and screw-system frogs, the use of different type of woods could have existed side by side for a long time, until the advantages of these exotic woods – especially snakewood and later Pernambuco – became clear and made European woods obsolete. They were also aware of the different characters of the black and white hair, but white hair was clearly not as ubiquitous as it is today. Regarding the weight of the bow, one had to consider their own personal preferences, as well as the proportions of the instrument.

Iconography – some famous gamba players

Iconographic sources can provide us with a great amount of information lacking in the written treatises. Paintings can show us the rooms, musicians' performance settings, but also in the case of the viol, they show us instruments, bows and bow-grips. We are lucky to have a great amount of iconography depicting the viol, and a few of them even showing some of the most famous viol players of different nations.

However, when we are dealing with paintings from the past, we must be even more careful than with written sources. The perspective of the painter can change the proportion or scale of the instrument and the bow. We can observe on some paintings where the instrument is not painted from the front, that it becomes asymmetric. In the case of the bow – as I was warned by a bow maker in a meeting – the curve of the bow stick can change. He drew my attention to the fact that, from a certain angle, even the curved

[23] Johan Joachim Quantz (1752). *On playing the flute*.
[24] Étienne Loulié (1690). *Méthode pour apprendre à jouer de la viole.*
[25] Mersenne, Marin (1636). *Harmonie Universelle*
[26] Simpson, Christopher (1659). *The division viol*. London

sticks look quite straight. Thus, if the bow is in a playing position, from the perspective of the painter it might look straighter than in reality. I also had some concerns about how reliable the depicted length of the bows is. This could also be dependent on the angle, but analyzing these heavily detail-oriented paintings, I find it probable that the painters took great care in proportioning the bow's length to the length of the strings, or to the body of the player.

As a musician, I still find it important to observe paintings in close detail, in order to learn about the musicians, instruments, and bows of a particular era. In this part of my research, I present some details about the viola da gamba bows with the help of engravings from some of the most important viol treatises, as well as the most prominent gamba players' portraits. I am aware of the relevant difficulties, but I believe that in examining these sources as thoroughly as possible, I can get closer to the 'technical' details of these players' bows. Most of them were composers as well (or inspired composers to write for them), and their compositions provide a major portion of our viola da gamba solo repertoire, so as a performer, I find it very helpful to keep in mind which equipment they used while playing their music.

To see the changes of the bow in the violists' world in the 16th-18th centuries, I will focus on some remarkable characteristics which can be identified even on a painting. The main points of my interest are: the insertion of the hair, the frog (size, height and mechanism – fixed, clip-in or screw), the length of the bow and the type of hair (white or black). In my experience as a performer, these are the aspects which give the character and the playing quality of the bows, and that can have the greatest effect on our playing as well. I will write about these effects more in the next chapter.

Silvestro Ganassi, *Regola Rubertina* (1542-43)

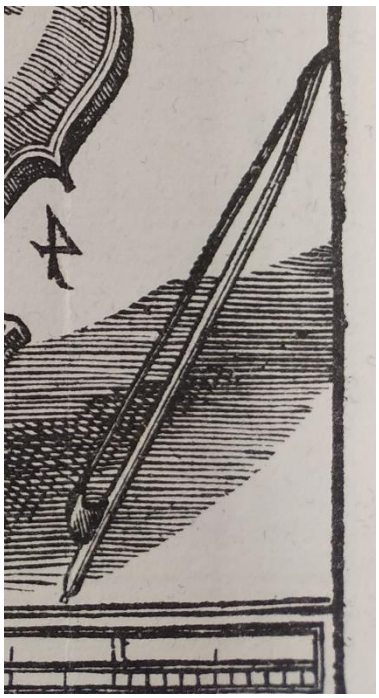
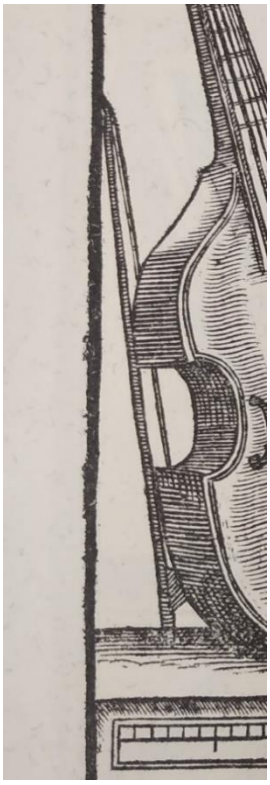
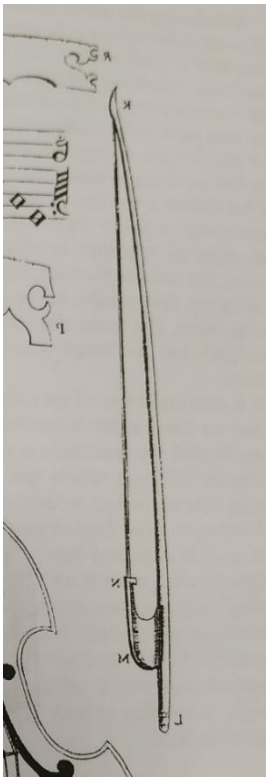
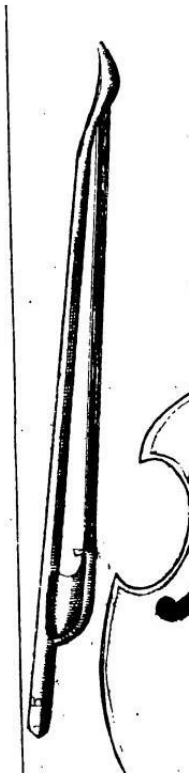
Ganassi's famous treatise*, Regola Rubertina,* is a very important source for viol players, being one of the first publications to go into instructional detail on playing the viola da gamba. It gives instructions on how to hold the instrument, the bow, how to tune, technique, and he speaks about ricercars and diminutions with great examples.

One can assume he chose his title page with great intention, matching the characteristics of the gamba players on the engraving with the content of his book. I can confirm this by looking at the bow-grip of the players, and reading the description of the bow-grip in Chapter III.

"You know that the bow is to be held with three fingers, that is to say the thumb, the index and middle fingers. The thumb and middle finger ensure, in holding the bow, that it does not fall, and the index finger serves to strengthen and stabilize it, keeping it on the strings and exerting more or less pressure according to the need."

The convex curve of the bow is most emphatic in the upper third, which is the result of a very low nut (covered by the right hand of the player). This also means that the distance between the hair and stick is significant at the tip but very narrow at the frog – which makes the bow-grip described by Ganassi very comfortable.

Regarding the insertion of the hair: there is no decent head yet where the hole-wedge system would fit. It is possible to see (more clearly with the bow of the player at the right) that the hair is inserted through a hole on the stick, and fixed with a knot. There is a little nut placed here at the tip as well, to keep the hair away from the stick. In proportion to the length of the strings and to the body of the player, the bow is quite short, although of course not touching the hair with fingers adds some centimetres to the playing length. The hair is black, consistent with most of the iconography of this period.

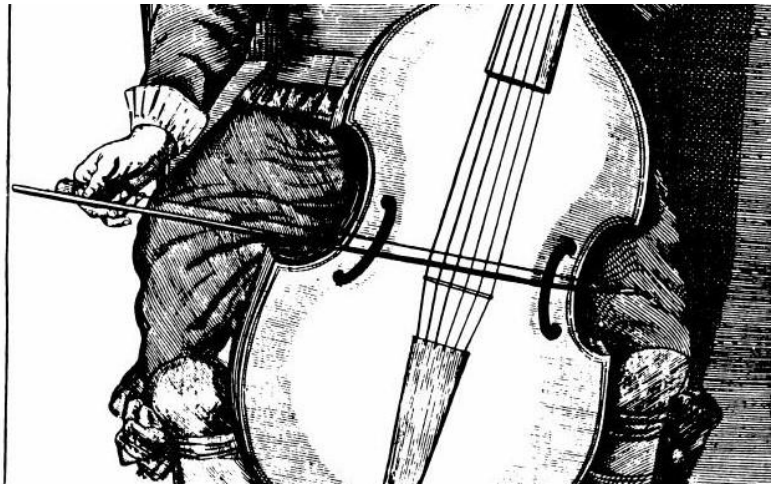
Praetorius: *Syntagma musicum* (1618-20) – *on the left, 1 and 2*
Marin Mersenne: *Harmonie Universale* (1636) – *3rd picture*
John Playford: *An introduction to the skill of music* (1654), London – *on the right*

I included these three books in my observations because they represent the music theory of the 17th century very well, from three prominent countries: Germany, France and England. They all have detailed illustrations and explanations of instruments.

The bows illustrated in Playford and Praetorius have very similar characteristics, despite the more than three decades between them or geographical distances. The most outstanding similarity is the shape of the head. The hair reaches the tip not at its bottom, but still at the inside curve of the tip, making the hole-wedge insertion system impossible. Because of the quality of the illustrations, it is not clear how the hair is fixed at the tip. For me, the simple knot (through a hole) attachment seems the most possible solution in the case of Mersenne and Playford. On the illustrations of Praetorius, the hair seems to be tightened to the wood.

The frog in all the three books is clip-in, approximately two finger lengths in height. This distance between the hair and the stick radically diminishes before the tip, because (as mentioned above) the hair reaches the stick already before the curve ends.

It is interesting to note how hidden the bows are in the book of Praetorius. For the five instruments illustrated on the page of the viols, only one has the bow next to it, while the other four are hidden behind the instrument. They are there as the accessories of the instruments, rather than as an important part of a viol player's life.



Christopher Simpson: *The Division Viol* (1659)

The bows described and illustrated in Simpson's book are great examples for bow makers of today as well.

"*A viol bow for division should be stiff but not heavy. Its length (betwixt the two places where the hairs are fastened at each end) about seven and twenty inches. The nut, short. The height of it about a fingers breadth, or little more*."

Thus, the length of the hair should be 27 inches (c. 68.5 cm). This makes the bow quite long (almost as long as the strings, which are 30 inches according to Simpson), but it is of course hard to know what Simpson means by the 'stiff but not heavy' description. He does not mention the type of wood he prefers – the 'not heavy' can refer to a lighter European wood, but to me the stick looks thin and elegant, and this thinness from a hard, exotic wood would have a 'stiffer' result.

The nut is small (a finger's breadth); just big enough to make it possible to place the fingers between the hair and the stick. Simpson is one of the first writers describing the bow-grip with the fingers placed on the hair:

> *"Hold the bow betwixt the ends of your thumb and two foremost fingers, near to the nut. The thumb and first finger fastened on the stalk; and the second finger's end turned in shorter, against the hairs thereof; by which you may poize and keep up the point of the bow. If the second finger have not strength enough, you may joyn the third finger in assistance to it; but in playing swift division, two fingers and the thumb is best."*

With this direct contact between the fingers and the hair, it is possible to make the articulation of fast notes very clear, which is of course essential for playing divisions.

The bow has a clip-in system, with the nut just held on place by the tension of the hair.

It is difficult to determine the type of the hair because the drawing is black and white, but regardless of the type, with such a thin and elegant bow, the number of hairs should complement (i.e., there should be relatively little hair).

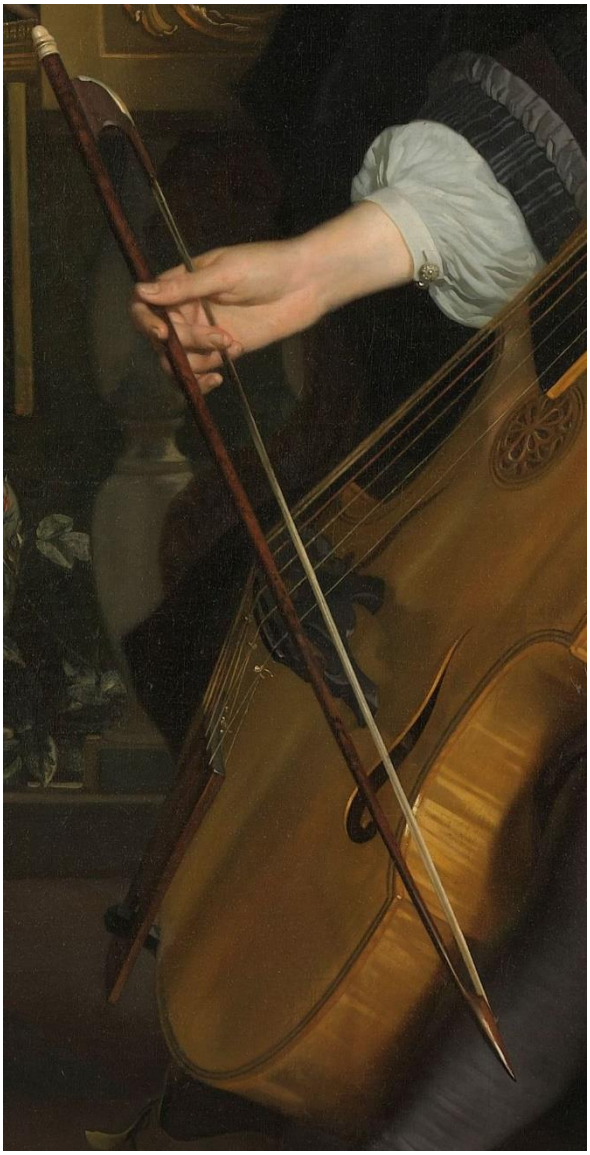
Simpson gives an example of the bow illustrated next to the instruments, and also in use (in playing position). The difference that I can see between the two illustrations is the curve of the bow and the nut – the bow in use is straighter and has a smaller frog. These differences, as Mr. Rodriguez pointed out to me, can easily be attributed to the different perspective. Showing the player from that angle can make the bow look like straight and the nut narrower.

Johannes Voorhout (1647–1723): *Musizierende Gezellschaft in Hamburg (1674)*. [27] The painting is now is in the Museum für Hamburgische Geschichte. This domestic music scene probably shows **Dietrich Buxtehude** playing a viol, with Johann Adam Reincken at the harpsichord. It is not certain that the viol player is Buxtehude, but they knew each other and worked together, so he must be at least someone from their music circle.

The bow of this painting is long in proportion to the instrument – it is even longer than the bow described by Simpson (considering as well that Simpson's division gamba might be smaller). It is difficult to trust the accuracy of painting regarding the stick of the bow, considering that the instrument has some perspective issues, being quite asymmetrical; I do not think the thinness of the bow near the tip is realistic. But certainly, the curve of the stick is quite remarkable, making the distance between the hair and stick big enough to fit two strongly curved fingers on the hair. The bow grip is somewhat of a mix of the two methods described by Ganassi and Simpson, with the thumb and two other fingers sitting on the frog and the stick, and other two on the hair, using all the fingers in controlling the bow.

[27] The viol player identified as Buxtehude by Karela J. Snyder

I see strong a connection between the bow, the instrument, the bow-grip, and the type of music that is being played. This instrument has six, exclusively unwound strings, which means the low G and D are very thick. A stronger, thicker bow with black hair makes it easier to make those strings sound, and with a solid bow grip using all five digits, one can make the bass line quite powerful. On the other hand, with a more 'delicate' grip, like Simpson's with a thinner stick, it is much easier to play and articulate the fast division passages that he wrote.



Right: Portrait of Sir John Langham as a Boy (1683).
Friedrich Kerseboom (1632-1693, London). Private collection.

Left: David Leeuw met zijn gezin (1671). Abraham van den Tempel (1622-1672). Rijksmuseum collection.

I decided to include these two portraits of young boys playing the viols in my collection because the paintings are so incredibly detailed, and they can give very useful information.

David Leeuw's painting depicts a wealthy family making music as an expression of harmonious family life, and Sir John Langham was also from a rich family. As musical training was one of the hallmarks of a gentleman's education, with wealthy families being able to afford the best masters and instruments, the paintings likely represent the viola da gamba bows of that period well.

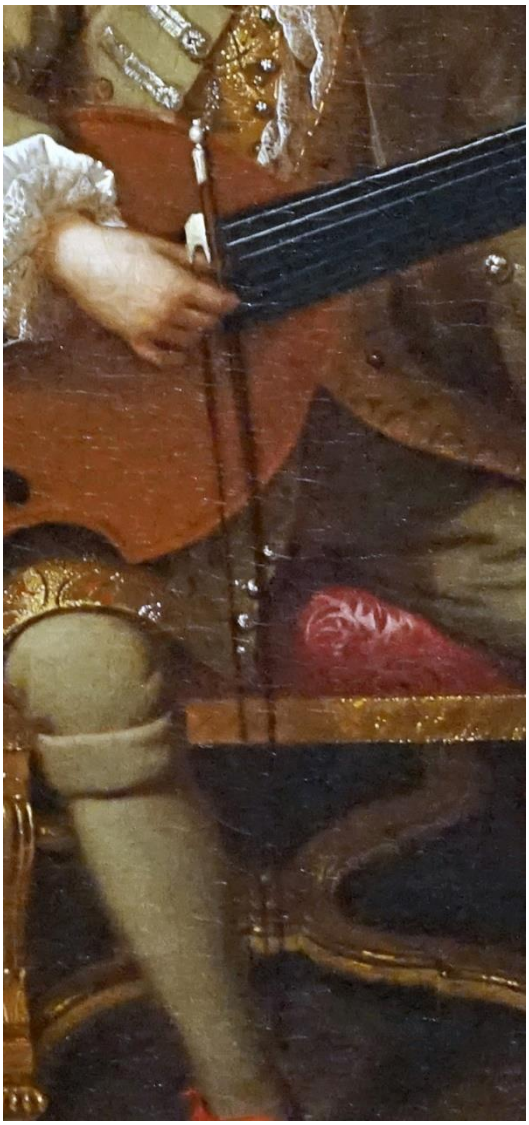
Although the bows look very long in proportion to the instrument, in my opinion the instrument in the painting is suitable for a 12-year-old boy (so a bit under the 'standard' size), but the bow can be full size (like for adults) – it is less disturbing for a child to play with a bit too long of a bow than with a too big of an instrument. So, the bows could have approximately the same length as Simpson's. The painting perspectives of the bows are different, so the stick of Langham's bow looks straighter with a narrower nut. The wood of the sticks has

the clear characteristic patterns of snakewood. The frogs are clip-in, on the paintings of Tempel the nut is from the same wood as the stick, but the bow of Langham probably has a boxwood nut, guessing by the color. The hair of the latter bow is black, which is very rarely the choice today when it is about such an elegant division type of bow.

An interesting detail of Leeuw's bow is that a piece of (probably) paper is inserted between the hair and the frog, for adjusting the tension. The proportions of this frog do not look very realistic. It seems like that with such a long part touching the hair, it couldn't stay in place – it should be tipping towards the tip.

The bow-grip of both boys is similar to the grip described in Simpson's book, so only one finger is touching the hair. The grip of Leeuw is a bit farther away from the frog, which makes the playing length of the hair shorter. However, in this case I find this detail somewhat irrelevant, because of the proportion between the long bow and the boy's arm.

Both bows have an ivory ornament at the frog end, which is not only decoration, but sometimes was also a kind of additional weight for perfecting the balance.



Up: Jean Dieu de Saint-Jean (1654-1695). Portait du musicien Marin Marais (1686)

Right: André Bouys (1656-1740). Marin Marais, ordinaire de La Musique de La Chambre du Roy (1704). Musée de la Musique, Paris[28]

These two famous paintings depict the most prominent gamba player of his time. The first shows Marin Marais in his thirties, with the bow pointing at his first publication for the viol, the *Piéces de Viole Livre I*. The other painting shows the older Marais, in the process of composing. This latter painting is a replica, the original painting seems to be lost, but there is a black print kept at the French National Library.

Regarding the length of Marais' bow: in proportion to the instrument, the hair of the bow matches the playing length of the strings. The stick is slightly curved, leaving the space between the hair and the stick around two fingers' width at the frog side and very narrow at the tip.

The hair is most probably black, even though on the painting of Saint-Jean it might seem white, if we observe the part close to the frog, where the player doesn't put rosin, it is clearly black.

Although there is almost twenty years' difference between the two paintings, the bows are very similar to each other, and could even be the same one. The curve and length are matching, both have the long ornamental white counterweight at the frog side. There is an interesting detail about the frog: on the black print of the original (and lost) Bouys painting, the frog is round, probably the same as on the Saint-Jean painting. In the later replica, the frog is different, although all the other characteristics of the bow stay the same. This square frog has also a piece of paper inserted between the hair and the frog for the tension adjustment.

[28] The black print of the original painting (which is lost) is kept at the Bibliothéque Nationale de France.

On the left: Jean-Martial Frédou (1710-1795). Portrait of Jean-Baptiste Forqueray (1737). Private collection.

On the right: Madame Henriette with viola da gamba (1754). Jean Marc Nattier (1685-1766). Porte of Anne Henriette de Bourbon (1727-1752), second daughter of Louis XV. Current location is Grand cabinet de Madame Adélaïde du Château de Versailles.

Madame Henriette was a contemporary and very likely a student of Jean-Baptiste Forqueray. She was the dedicatee of *Pieces de viole* by Antoine Forqueray (edited by the son, Jean-Baptiste).

The bows of Jean-Baptiste Forqueray and his student are very similar to each other, and to the one described by Simpson.

As we saw before, it is difficult to draw conclusions about the curve of the bow from paintings, especially in the case of Forqueray's bow, which from an angle which seems very straight. The bow of Mme. Henriette is the longest of all – the length of the hair is even longer than the playing length of the strings.

The nut of both bows seems to be from the same wood as the stick; it is interesting to see the different choice of hair type in such similar bows.

It is hard to determine anything about the insertion of the hair and the frog mechanism, because the end of the bow is missing from the painting of Forqueray.

They hold the bow very close to the frog, closer than Marais' on his earlier painting. Only one finger is touching the hair, and both have their wrists significantly bent outwards. In today's viola da gamba technique, I only experienced this amount of wrist-bending close to the frog, and not at the tip. I find it important to mention the bow-grip as well in this part of my research, because it has an effect not only on playing technique, but naturally also on how we feel and experience the bow itself. I will write about it in more details in the next chapter, but, for example, holding the bow closer or farther away from the bridge not only gives a different playing length but changes the balance of the bow completely.

Left: Thomas Gainsborough (1727-1788): Ann Ford (later Mrs. Philip Thicknesse). 1760

Middle: Thomas Gainsborough (1727-1788): Portrait of Carl Friedrich Abel (ca. 1765). National Portait Gallery, London.

Right: Thomas Gainsborough (1727-1788): Portrait of Carl Friedrich Abel, German composer (1777). Huntington Library

Carl Friedrich Abel, one of the last virtuosos of the viola da gamba, composer of a great amount of viol solo music as well as accompanied sonatas. And Ann Ford, his contemporary, a very admired singer and viol payer of her time.

Gainsborough was a viol player himself, fond of music and a very good friend of Abel and Ann Ford. We know that Gainsborough enjoyed looking at an instrument just as much as hearing it: "I have seen him for many minutes surveying, in silence, the perfections of an instrument, from the just proportions of the model, and beauty of the workmanship."[29] So we can assume that he also depicted them on his paintings with accuracy and care about details.

The bows of Carl Friedrich Abel and Ann Ford are very similar with a long and straight stick – Ann Ford's is even longer than Abel's, with the length around ten centimeters longer than the playing length of the strings. The stick seems thicker than the bow of Forqueray or Mme. Henriette, and the color of the wood is lighter. It is possible that the wood used for Abel's bow is not snakewood, but Pernambuco. In a description of a music magazine in 1783, a Tielke viola da gamba was offered for sale in Hamburg.

[29] Mary Cyr*: Carl Friedrich Abel's Solos: A Musical Offering to Gainsborough*?

According to the detailed description, “Its bow, made earlier by Meyer, is of brown Pernambuco wood.”[30] It is very possible that this instrument was owned by Abel, which means the bow was as well, even if it is not the one painted by Gainsborough.

The hair in all the bows is white, the nut of the bows is short, made from ivory. On the later portrait of Abel, the hair is inserted into the frog, so the bow has a screw mechanism.

What happened with the original viol bows from the 16th-17th century?

Looking at original bows in museums or in the online collections of museums, I only found bows from the second half of the 18th century – and most of the time it is not certain whether it was for the viol or for the cello. So, what happened with the bows before the 18th century? We can only guess, but there are some possible explanations. First of all, sometimes if the quality of the bow or the wood was not of such a high level, it was easier to ‘throw away’ the old bow and get a new one with the desired changes – for example, a longer one, or one with a frog with the screw mechanism. But in most cases, especially if the bow was made from a great and expensive wood like snakewood, it was a good solution to transform them. I was told by a bow maker that, for example, it is very probable that good gamba bows were transformed into violin bows after the gamba fell out of fashion as an instrument. In the case of transitional violin bows, a lot of times a little extra additional plate can be seen under the frog. If one would like to transform a clip-in frog viol bow into a pre-classical violin bow, it can be down by filling up the space of the clip-in frog with a thin plate, and then adding the screw-mechanism and bending the bow into a concave shape.

What I have learnt from the historical sources

While going through all the treatises and the iconography, I feel that I could gain sufficient historical background knowledge about the viol bows. It helps me make historically informed choices as a musician – the first result was my bow I bought in the summer. With this background knowledge, I knew what I was looking for to play mainly continuo part of music from the late 16th-early 17th century. I needed a shorter bow made from European wood, with clip-in frog and black hair. Another outcome is that now I strongly believe that I should have at least three bows to understand and interpret well the repertoire from the 16th to the end of the 18th century. One with a thicker stick, made from European wood, with the playing length of around 60-65 centimeters, and with clip-in frog system. This is the most suitable for the music from the 16th century, for continuo playing and for larger instruments with unwounded strings. Then a longer and thinner bow, made from snake wood, with a shorter nut, still with clip-in system. This bow suits the best for the solo repertoire of the late 17th, early 18th century and if it is light enough can work for the English division repertoire as well.

[30] Holman: Life after Death: The Viola da Gamba in Britain from Purcell to Dolmetsch

[31]The third type of bow – what I still miss – would be suitable for playing music from the second half of the 18th century, for example music by C.P. E. Bach or C. F. Abel. These bows are long and have very strong sticks, sometimes fluted, which makes it strong but light. The stick under tension is straight, made from snakewood or Pernambuco. The frog has a screw system already. A very important characteristic is that it already has the higher swan-head, similar to the modern bows. The head is more elevated, to keep a higher distance between the stick and the hair. In Chapter I am going to explain the effect of these technical differences on my playing.

Having these three bows is still a compromise – playing Bach, Forqueray or Simpson with the same bow, does not help to explore and show the different characteristics of their music. Unfortunately, most of the musicians have limited financial opportunities, so compromises are unescapable. I would like to make a remark here about the instruments. What I have described here regarding the bows, stands perhaps even more for the instruments. For the repertoire of the viol, we should have several instruments with differences in size, shape and number of strings. Very few musicians can afford that, while having more than one bow usually seems financially possible.

[31] Viola da gamba bow, middle of 18th century, England. Kept in Edinburgh Museum

CHAPTER III

My own bow-making experience

In this chapter, I am going to show my process of making a bow, and how far I could get in this in one year. Obviously, I did not become a bow maker. First, I had not worked with wood before, and I realized very quickly, that all this physical work makes my hand very tired and affects my fingers and skin. As a musician it is very hard to balance between working in a workshop and practicing or having concert the next day. For this reason, I also had to make some compromises in the tools I use (especially because I had no previous experience), replacing sometimes the knives and very sharp tools with files.

1. The first bow

As part of my research about historical bow making, I found it important to have some practical experience, to get information about tools, wood and the process of bow-making. For this experience, I found Helmut Riebl, who works in The Hague, and as he is a musician as well, he finds it very important to share his knowledge and 15-years' experience of bow-making with other musicians. He has a well-structured, 10-days-course, which contains 8 days of bow-making, and 2 days shopping. This means that we go together to select and buy wood, and tools what I can take home at the end of the course, so I can continue with another bow on my own.

Here is the process of making my first bow, copying my own cello bow made by Eitan Hoffer.

a. The process

Day 1:

- Selecting **wood**: Massaranduba – it is a South American hard wood with high (a little bit less than snakewood) density. We choose this wood, because it is a bit easier to work with this wood than with snakewood for the first time, but they have similar characteristics. Snakewood cracks very easily by the smallest mistakes.
- Making a **blue-print**: we make two drawings – one with tension and one without tension with all the exact measurements. We marked the height and width in every 10 centimeters, the measurements of the frog and the distance of the hair and stick.
- Making the **frog** from Massaranduba as well. By the end of the day, the basic shape of the frog was ready with an extra 1 mm.

Day 2: the goal is to finish the frog and to get close to the measurements of the stick (but still square shape).

- Frog: making the canal for the hair. The two sides have to be very symmetric and cannot be too thin. The important part is where the hair leaves the frog, which has to be the highest point and very round, so the hair lies on it nicely. The rest of the frog is design and it depends on the creativity of the maker.

- Stick: we can write the numbers (measurements) on the side of the stick, so it is easy to follow (measuring regularly) how much wood we have to remove. I work with wood plane, for the first time in my life, it takes time to get used to it. It is very hard to make clean and flat surfaces. The bigger the tool, the easier it is to avoid mistakes and small waves.

Day 3: the goal is to reach 1 mm extra from the final measurement from each side of the **stick**.

- When we are closer to the final measurement, we had better change to sandpaper, it is easier to control.
- It is important to keep the sides of the stick flat and straight
- When it is ready, I polish the stick: with sandpaper, starting with 80, finishing with 12000. When it is nicely polished, it is easier to see the mistakes and little waves on the surface.
- If there is a 'belly' in the stick, it is a common solution to bend the stick back with heat.
- Starting the **tip:** I have to draw the shape of the tip on the wood. There are two important parts: the distance between the hair and the stick, and the place where the hair leaves the tip. The rest is design, but of course important for the balance.

Day 4: finishing the tip.

- I almost reach the final shape of the tip. It is important to keep it symmetric, and to check the height.
- The place where the hair will sit cannot be too thin - that would make it very difficult to make the hole.
- For the shape of the curve of the tip, I use a small machine.
- Working on the **stick**: with sandpaper, reaching the final measurements of the stick (but still square shape).

Day 5: finishing the tip and making the octagon shape.

- Tip: I can design it as I wish, only the width around the place where the hair comes out is important.
- It is important to take care that the end of the tip is exactly in the middle, as the continuation of the stick.
- There are different options to make the octagon shape of the stick
    - Blade
    - Plane (very hard to control)
    - Sandpaper (for finishing it)
    - A small Japanese hand tool
- I remove the edges until it becomes equal octagon
- After it is ready, I polish the stick, so I can see again all the little mistakes which have to be corrected

Day 6:

- After the octagon shape is ready, I remove the edges again, making it equal. Then I remove those edges too, until it becomes a 'chaos'. This is the best to do with the non-sharp part of the blade. I continue

until all the edges disappear, and the stick becomes round. It is a long and slow process, requires a lot of patience. The best is to touch it, and when I do not feel any edges, it is ready for the final polishing.

Day 7:

- I practicing the hole for the hair, not on the stick, but on a different wood.For the hole, I use the small hand machine and chisel. It is important that the angles of the sides have to be the same!

The hole can be made most easily by the hand machine. It has to be big enough for the knot of the hair.

- Wedge: it has to fit perfectly into the hole, there cannot be a gap at all

Day 8:

- I finish the frog, so it fits completely to the stick
- I make the hole on the stick. The important thing is, that the holes are big enough to make space for the hair, but the walls are not too thin.
- Selecting the hair: around 120-125 hairs in a cello bow, it depends also how thick they are. I have to select the good hairs, which feel smooth and are more or less the same thickness.
- Inserting the hair: first we need to make a knot very tight in one end, then cut the hair short next to it. In order to avoid the thread slipping down the hair, it is necessary to fix the end of the hair with melted rosin. Then we put the hair into the tip's hole and insert the wedge. It is important that the hair is equally spread along the side of the wedge. After this, we comb the hair with a wet comb (when the hair is wet, it is longer a bit, so it gives us a few extra millimeters when inserting it), and we cut it to the right length. It is the trickiest part, experience and good eye-judgment is required to know how long it should be to get the right tension.

b. The result

After the bow was ready to play, I tried it and made some adjustments. It was a bit too heavy and had a little tremble around the two-third of the stick. With a bit more sandpapering, I removed around a tenth mm. I was a bit too careful, being afraid that it will be too much, but it was very nice to experience that removing such little material, can change in the feeling of the bow so much. It became more responsive with a slightly different balance.

In a few days, the tension of the hair became too loose, even with the tightest position of the crémaillére system, it was not playable. I supposed that the hair was moving a bit under the wedge, with the insertion of the frog and the constant tension, it came out a bit more than the first day. Having the hair in a lower tension makes the feeling of the bow weight even heavier, so it was very hard to judge and make further adaptations on the stick. I had to make a new knot, making the hair shorter – after the second try (unfortunately I could not use the original hair, because I cut it too short), I managed to find the right tension. Then I played for a few days with my bow, even a concert, and I found it definitely too heavy but with a good attack and nice balance. The stick was still thick enough to be able to remove material, but my concern was if I start to remove material, will it change the accuracy or the balance of the bow? One of my future plans about the research is to work more on the bows I have made in this year, in order to be able to answer these questions.

2. The second bow

My second bow was a copy of one of my college's gamba bow. The original bow is a very light and delicate bass viol bow made from snakewood. I chose to make this bow completely alone, with no help, expecting to make a lot of mistakes but gain a great experience of what I can do on my own. Because I had no help, I decided not to work with snakewood yet. Not only because it is the hardest wood to work with, but it is also very expensive, and I was not sure that finally I could get a useable bow. I chose the wood IPE, which is also a South American wood with high density. It is a bit lighter than snakewood, so I planned to leave 1 mm extra for the diameter of the stick, not to have a too light bow for the bass. Well, it did not go exactly as I planned…

a. The process

I will not detail the whole process of making my second bow here, because I followed the steps of the first bow, and since I took a lot of notes and documented everything during the course, it was a big help. But mistakes still happened of course, which I can learn from. I will share here the little differences I made during the process:

- Making the frog and the tip, I used a knife instead of the files. With the first bow, I did not want to use sharp tools, but while I was working, I got familiar enough with the wood-working so that I could use the knife properly. It makes the process faster and more accurate, but harder to control the tool.
- I made my biggest mistake while shaving the stick with the plane – I worked on one side too long, almost until I reached the planned measurements. The result was an asymmetric stick, with an almost straight one side and a big hollow around the tip on the other. To be able to corrugate it, I had to remove quite some material from the straight side, and this made me go way under my planned measurements.
- Another difficult part was going from the octagonal shape to the round one. I could not make 16 sides from 8, the sides became unequal and a bit messy. I could not follow the 16 sides with my eyes anymore, so I went directly to the rounding.
- I also made mistakes during the process of inserting the hair. I did not tighten the thread around the hair well enough, somehow, I thought it would be solved when I burned the end. I turned the knot into crushed rosin only, and then I burned it. I think I did not take enough care to keep the hairs tightly and some of them moved during the insertion. The result was a bit looser hair on one side of the bow.
- First the hair was too loose, I had to take out the wedge, shorten the hair – then of course it became harder to insert it into the whole. I still do not feel it very well how much bending the bow can sustain from the tension of the hair. When I put the hair in the second time, I felt the tension still too low. When I shortened the hair again, I made the mistake to make it too short, so when I tried to fit the frog, it made the hair too tense and created a very unnatural curve for the bow. It took me a long time to find the right tension for this bow, but finally I managed, and I could insert the clip-in frog.

b. The result

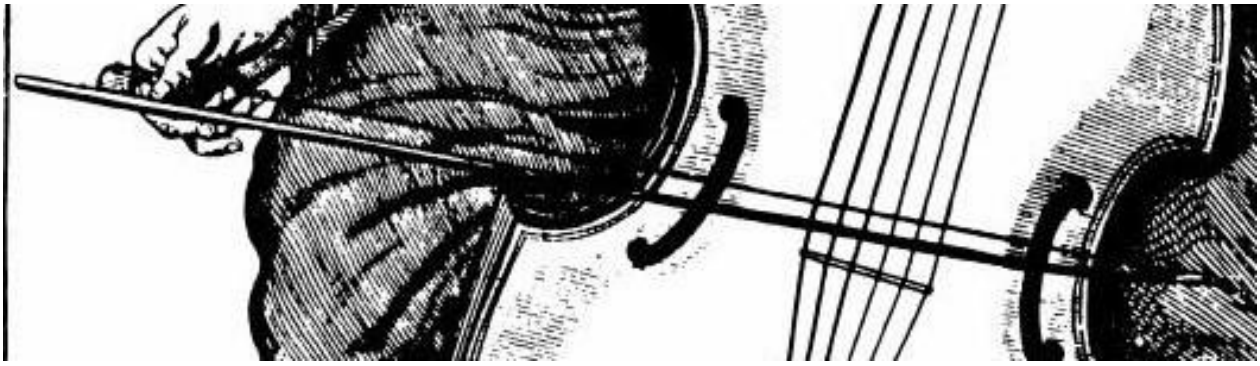
The result is a very different bow from what I planned. Because of my mistake around the wood removal, I got a much lighter and thinner bow. It is too light to make the bass viol sound properly, but I have tried with the treble and it is very comfortable for that size.

I left the stick very long at the frog end, to be able to decide later how short it needs to be for a good balance. Since I haven't found the right hair tension yet, I still left it long.

3. The third bow

After this bow, my next attempt was to make a bow which is not a copy. I chose the bow described by Christopher Simpson in his Division Viol.

The description given by Simpson: "*A viol bow for division should be stiff but not heavy. Its length (betwixst the two places where the hairs are fastened at each end) about seven and twenty inches. The nut, short. The height of it about a fingers breadth, or little more*."[32]



With the decision of making a bow which is not a copy, I hoped to understand more of the process the bow makers have to go through when creating their models. The length of the hair was given by Simpson as 68.5 cm, and I could use the illustration as well, as a basic idea. However, when planning the bow design, I could understand how much the bow makers have to guess and figure out on their own to design their models, even when they have a little description and illustration.

For this bow, I chose ironwood to work with. It is a heavy wood, but not as much as snakewood, and when I made the stick as thin as I wanted to, I found the result a bit too light and the stick not stiff enough.

In the second video, I give an overview of my working process, and I would also like to show the working environment where I have spent the last year.

[32] Simpson: The Division Viol

What I have learnt from the bow-making

Wood

Snakewood

The most popular choice of exotic wood is snakewood. Snakewood grows at the coastal regions of northeast South America. It is very rare and for this reason it is one of the most expensive woods.[33] Snakewood is called so because of its characteristic snakeskin patterns. The wood is typically reddish brown, with contrasting darker brown or black patches. The color tends to darken and homogenize with age and exposure. It is one of the heaviest woods and is exceptionally long-grained, which makes it very elastic and flexible lengthwise, but because of its exceptionally high density and hardness, very long bow sticks can be made from it which are extremely delicate at the tip without lacking strength.

Workability: snakewood tends to be quite brittle and can splinter easily while being worked. Despite the difficulties of working it, Snakewood turns well and finishes to a high polish.

Ironwood

Ironwood was also used to make bows, and today's bow makers sometimes choose it for their models as well. Black Ironwood's heartwood can be a range of reds, oranges, violets, and browns. It grows in Southern Florida, the Caribbean, and Central America. Black Ironwood tends to be a very small tree, barely exceeding the size of a shrub. Because of its small size and high density, it is not sold commercially, but it is a little cheaper than snakewood.

It has a straight and even grain with a very fine texture and high natural luster. It is a very hard wood with high density, but a bit less than that of snakewood, which makes it slightly easier to work with it.

[33] I collected my information by talking to bow makers and from the website: https://www.wood-database.com/

Ebony

Ebony is a beautiful dark wood which works very well for early bows. The heartwood is usually jet-black, with little to no variation or visible grain. Occasionally dark brown or grayish-brown streaks may be present. It grows in Equatorial West Africa. The grain is usually straight, but it can happen that grains are interlocked (more often than with snakewood or ironwood). In case of interlocked or irregular grain, during the working process, tear out can happen – it makes it rather tricky to work with this wood. But it has a fine even texture with very high natural luster.

The wood is exceptionally dense, strong, and stiff, though it is considered to have moderate to poor stability through seasonal changes. It can be difficult to work with it due to its extremely high density. Finishes well, and polishes to a high luster.

The bows fabricated from ironwood or ebony are usually made a bit thicker than snakewood bows, sometimes intended for larger instruments.

European wood

A lot of European wood have been used. As I imagine, bow makers used the wood material that they had found in the nearest forest and that worked the best from there, or some types of woods commonly used for instruments. These can be plum, cherry, beech, larch, yew. These are also the most favored choices of the bow makers today, together with acacia.

Hair

The hair comes from the tails of horses in cold climates such as Siberia, Mongolia and Canada. (Although I heard that the hair of Hungarian horses also works well, but I have not been able to try it yet). The cold climate makes the horses produce hair that is thicker and stronger than that produced by horses in warmer climates. White hair comes from white horses, bleaching damages the hair, and makes the quality very low. Black hair is usually thicker than white hair and its surface is rougher. Of all the hair in a horse's tail, only a small fraction is good enough for use in bows – after the collection, it has been pre-selected, cleaned and organized by length before selling, and most bow makers do an extra selection to remove all the imperfect hairs.

Hair tension: I discovered how much it changes the feeling of a bow if the hair is not under the right tension – if it is too loose, the bow feels much heavier, and if it is under the right tension, the feeling becomes lighter.

Number of hairs: as experienced, too many hairs make the bow very clumsy – the stick does not react properly. There is not an exact number of hairs which works for every viol bow, the hair has to be in proportion with the thickness and heaviness of the stick. For this reason - and because of the unescapable variance of the thickness of the individual hairs -, some bow makers prefer to weigh the hair rather than count them.

Tools

In my opinion, the choice of tools is a very decisive point of today's historical bow making. Every bow maker must make the choice to stay with the 'pure historical' equipment of a workshop, or to use some machines and tools which clearly did not exist in the 16th-17th century but make the work easier and faster. I collected a list of what were probably used in in the bow makers' workshop in those centuries.[34] There are quite a lot of tools and templates from the workshop of Antonio Stradivari[35] - including small planes, a lathe and templates of bow heads. It is a bit later period than my focus, but it can just confirm, that 100 years before Stradivari they might have had even fewer options for tools to work with. For bow making the following items may have been used:

Saw – for all the pre-cutting of the wood, to the closest shape.

Planes – in different sizes, for shaving the wood off to the right dimensions, and to the required shape.

Rasps and files – for removing material very finely, shaping the head and the frog

Knife and scraper– for fine material removal as well, shaping the curved parts of the bow, like the very end of the tip, the head and the frog.

Chisel – for making the holes for the hair.

There is no evidence of sandpaper - the available materials to get a smooth surface might have been scrapers, catfish-skin, horsetail or pumice powder.

Stick

The best result in contact and respond comes if the stick gets thinner towards the tip perfectly gradually. When I had my first bow ready, and I started to test it, I could feel the trembling in some parts of the stick. When I started to remove material from those parts, it started to get better immediately.

Future plans about bow making

To continue my research, I am planning to visit more bow makers, to have a better overview about historical bow making in Europe. Regarding my own practice, I want to experiment with the three bows I made for further understanding. I would like to see what difference I can make in the feeling of the bow by removing more materials, using shorter or higher nuts, or moving the frog along the stick.

[34] Compiling this list, I had help from Bernhard Ritschard bow maker.

[35] Sacconi, F. S. (1979). *The secrets of Stradivari*

CHAPTER IV

Personal experience as a player

As the last part of my research, I would like to answer my research question – does all this knowledge affect my artistic decisions and my everyday practice? I would like to share some experience from my own practice - and from discussions with other musicians - about the effect of all these technical differences of the bows on our playing. It is important to point out that what we experience with the bow while playing is very personal. Some aspects, like the question of the hair, might affect the sound more directly – making the difference clear to the listener as well. Some other qualities, like the clip-in frog system, has more impact on the feeling of the player – making the artistic decisions different, for example the articulation or the length of the notes.

Apart from the bows I made, I have a snakewood bow with screw mechanism and white hair. And I could buy another bow half a year ago – it is made from acacia wood; it has black hair and very thick stick with a high frog. I can use it very well not only on my gamba, but with my baroque cello as well, playing with underhand bow-grip.

About the hair

It is perhaps the easiest to define the difference between playing with white or black hair. Described also in a few treatises, white hair gives a sweeter, 'delicate' effect, more suitable for solo playing, while black hair plays sharper, articulates more, because the surface of the hair is coarser. I have played the same bow with both types of hairs to test the difference, and in my experience, it was easier to make the low strings sound with the black hair and for powerful chords it also worked very well. Because my gamba is a bit weak in the articulation of the low strings, for me black hair helped to make them speak. However, for playing gently on the upper two strings or for delicate lines it did not respond sufficiently. I felt white hair more suitable for playing solo repertoire, especially French music. Finally, I decided to leave the white hair in my bow because of the solo playing and use my other bow more for ensemble playing.

Another personal experience that confirms all the statements of the treatises: when I put the non-wounded low G and D strings on my instrument, because they are very thick, they definitely need more power to speak. I need my acacia bow with the black hair to be able to make them sound – the thickness of the stick, the black hair which grasps the string more, and the different bow grip (the grip described by Ganassi) make it possible to articulate well. The result is a harsher but much more powerful sound than with my 'normal' setting and snakewood bow, and the bass comes through more significantly in a bigger ensemble.

About the frog system

The main difference what I experienced when playing with a clip-in frog bow (and most of my colleagues confirmed that) is in the contact with the string through the bow. When the hair is inserted into the stick, it gets a very direct and accurate respond from the bow, making the articulation very clear and fast. The bow 'obeys' the hand completely. I find the sound more direct as well. An important thing with the clip-in frog is that the hair tension must be well set off, because with too loose hair, the feeling of the bow will be heavier and non-responding.

There is another very important difference between the screw and clip-in system. Tightening the hair with the screw mechanism, the frog moves along the stick – it changes the balance of the bow a little bit. And I believe, for a professional musician this nuance can make a difference.

About the disadvantage that the clip-in frog's hair tension is not adjustable, I can only say that I have had my bow for almost a year now, from which I never take the nut out, and I have never felt that the tension is not right. In a few cases during the winter, a piece of paper put between the hair and the frog was enough to get the tension to the right point again. It is possible of course that with other models one would get more problems, but the option of having two frogs of different height can be a good solution as well.

About the curve of the stick

The curve of the bow also affects the articulation very much. Recently I was part of a meeting of the leading viola da gamba players and teachers in Europe, where we listened to a lecture about the bow strokes of Marais and Forqueray. The discussion went into the direction of playing 'spiccato' on the viol, and whether it was part of the gamba technique or not. It is not my intension to take sides in this paper, but after this lecture and a lesson on the spiccato technique, I took some time to practice it. I can play spiccato on the cello – although it is naturally different with underhand bow-grip -, so I am familiar with the general feeling and process to learn this technique. Despite all my effort, I felt I could not acquire the spiccato on the gamba, because my bow did not respond to that impulse. A few days after this experience, I had the opportunity to try a completely different bow. The stick of that bow was very thick, the bow heavy and the curve concave, almost like a modern cello bow. When I tried to play spiccato with this bow (which is actually the bow-model of the viol player who gave the lecture on spiccato technique), it worked very easily. My concern is that there is no record of such a bow with concave bow stick from the time of Marais and Forqueray. The question rises then – do we adapt our technique to the bow, or do we adapt the bow to our technique? It is a personal choice, after this research process, my artistic intention is to adapt my technique to the bow.

About the wood

Another important question is the choice of wood. A bow made from European wood, has to be thicker, because the wood is less hard and less dense than the exotic woods. So the feeling of the bow will be completely different – there is less flexibility and movement from the stick, the bow feels a bit 'lazy'. For me, playing with my acacia bow, with black hair, especially combined with the bow grip by Ganassi, opens up a world. The attack at the beginning of the notes becomes very clear, the sound is powerful, it fits perfectly for continuo playing or in bigger ensembles.

About the length of the bow

In my experience, the length of the bow has the clearest effects on the shape of the notes and on the choice of slurs. With a longer bow it is possible to play slower long notes, going more into the string, which can create the mezza di voce effect as well. With my shorter bow, I have to make the beginning very clear, and then let the sound go away, I cannot sustain it too much. The length also affects the decisions where and how to make the slurs. It is not only because the number of slurs are limited by the playing length of the bow. Since the attack at the beginning is very clear, but then it is difficult to sustain the sound, I prefer to play the notes separated in fast passages for clear articulation, and use slurs preferably for musical effects, like sigh.

An example from a violinist colleague was about the difference between his violin bow and a short French bow. The bow grip - where they place the thumb under the nut – started to make more sense with the weight balance. Most of the bowings given by Lully worked better and felt more comfortable. However, he felt that the volume is less with this bow than it would be with a long bow. So it might be a challenge to lead an orchestra, where the majority of the players do not have a French bow and they use their long bows to play Lully.

About the bows from the second half of the 18th century

As I already mentioned in Chapter II, the bow for the repertoire from the late 18th century has different characteristics. We already have some existing examples from this period, although it is never very clear for which instrument they are meant to be. These bows are long and have very strong sticks, sometimes fluted, which makes it strong but light. The stick under tension is straight and it already has the higher swan-head, similar to the modern bows. When I tried to play the music of C.P.E. Bach or Abel with this bow model, I could solve the technical challenges of their music more effectively. Because this bow is very strong around the tip as well, all the parts of the bow can do the same. I could put more strength at the tip, which made the sudden dynamic changes of C.P.E. Bach easier. With the straight stick and strong tip, the long slurs of their music become possible, even with the string crossings. I could do the delicate ornamentation figures at any part of the bow. With this model, the up and down bows already started to be more equal in articulation and expression.

Conclusion

After investigating more than one year into the topic of historical bows and bow making, I can say it changed me as a musician. First – as the most personal part – my relationship became different with the bows I am playing with. I am more aware and conscious of what the bow in my hand wants to do and how it reacts to the impulses of my right-hand technique. I am in the process of learning to let the bow have more control, and my right hand less.

Iconography and treatises show us the variety in the bow construction until the end of the 18th century. There is no standard for length, shape, or the choice between black and white hair. We can generally say that the curve of the stick was more emphatic in the 15th century, and it gradually decreased for better control of the stick. After very simple ways of hair attachment, around 1700, the whole-wedge system (that is in use today) became possible, thanks to the appearance of the proper head. All these changes made the control of the bow easier and the articulation clearer.

Knowing about the historical background and the development of the bow construction, made my choice of bows more conscious. When I play a piece from a composer, now I have a better knowledge about the characteristics of the bow that his musicians might have used. This makes my musical choices about articulation, tempo, slurs or balance different.

We can find suggestions in the treatises about using black or white hair in the bow – they recommend white hair for solo playing, and black hair for orchestra or ensemble playing, or for larger instruments. Examining the iconography of the viol players, I could observe that the choice of black hair was more frequent in the 15th-16th century, but even on the portrait of Mme Henriette de France in 1775 we can see black hair in a very thin and delicate bow. After trying out more options, I prefer white hair in the bow I usually use for solo playing, and black hair in the bow I play continuo with, because black hair grasps the string better and has a slightly harsher sound.

It is clear from all the sources, that screw mechanism was not in practice until the middle of the 18th century. The bows were made with clip-in frog system, where the frog is kept in place by the tension of the hair. In today's practice screw mechanism is the most popular choice, because it makes the tension adaptation easier. On the other hand, I believe that the clip-in system has its advantages. Because the hair is attached directly into the stick, the resonance of the string is unbroken, and it makes the articulation and the beginning attack of the notes extremely clear. It allows extra contact between the right hand and the string, and direct response from the bow.

Rousseau, at the end of the 17th century still considers European wood as a good choice for bows – today viol players seldom use bows made from non-exotic wood, although our repertoire has an important part from the 16th century. During my research process, I could experience the difference between the wood types, and I believe using bows made from European wood can give extra understanding, especially for the 16th century repertoire.

The conclusion I can drew from my bow making experience is that bow making is an art. One can acquire the technical knowledge and make fine bows with practice, but for great bows one needs more, they come from talent, just like in music.

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