

*Making Period Paintbrushes*  
*Kingdom Arts and Sciences*  
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A paintbrush is one of the illuminator's most important tools. Although period instructions on making paintbrushes in period are few and far between, I used the information available to make several paintbrushes using variations.

### **Period Sources for Paintbrush Making**

Not many period sources exist that explain how paintbrushes were made in period. I have read one, *The Craftsman's Handbook "Il Libro del l'Arte"* by Cennino d'Andrea Cennini, and have heard of one more, *The Three Books of the Potter's Art* by Cavaliere Piccolpasso written in 1548. We have plenty of illuminations illustrating an artist with a paintbrush, but we do not get much detail or process from the illuminations. I found one other mention in very late period of the hairs used to make paintbrushes in Merrifield's book, *Medieval and Renaissance Treatises on the Arts of Painting*.<sup>1</sup> The source is called the Brussels Manuscript and was written by a painter named Pierre Lebrun in 1635.<sup>2</sup> The author refers to paintbrushes as "pencils" and says that the brush heads should be made of "a soft kind of hair, but which has sufficient resistance to keep itself straight, and to make a firm point for painting."<sup>3</sup> The author then lists animals that provide fur that meets these requirements: bear, marten and similar animals, hog, and "fishes" which is annotated to probably refer to seal.<sup>4</sup> While described in a section on stained glass as opposed to illumination, *On Divers Arts* mentions making paintbrushes with "hair from the tail of a marten, badger, squirrel, or cat for from the mane of a donkey."<sup>5</sup>

Cennini describes the process of making two kinds of paintbrushes: minever and bristle brushes. I will only deal with his instructions on making minever brushes, since the boar bristle brushes that he describes making sound more like something you would use to prepare a canvas or wall for paint as opposed to fine work like illumination. Cennini describes the process of making minever brushes this way:<sup>6</sup>

### **HOW TO MAKE MINEVER BRUSHES**

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<sup>1</sup> Merrifield at 770.

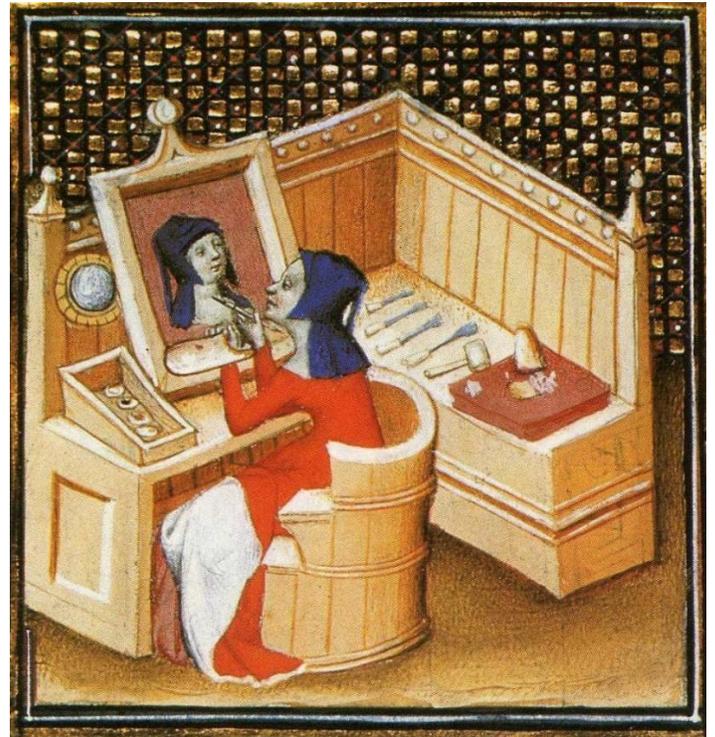
<sup>2</sup> Merrifield at 766.

<sup>3</sup> Merrifield at 770.

<sup>4</sup> Merrifield at 770-771.

<sup>5</sup> Theophilus at 62.

<sup>6</sup> Cennini at 40-41.



*1 Unknown Artist from Giovanni Boccaccio (1313-1375) De claris mulieribus, Anonymous French Translanto, Le livre de femmes nobles et renomées, France c 1440 British Library Autoportrait sur bois*

“Take minever tails, for no others are suitable; and these tails should be cooked, and not raw; the furriers will tell you that. Take one of these tails; first pull the tip out of it, for those are the long hairs and put the tips of several tails together, for out of six or eight tips you will get a soft brush good for gilding on panel, that is, wetting down with it, as I will show you later on. Then go back to the tail, and take it in your hand; and take the straightest and firmest hairs out of the middle of the tail; and gradually make up little bunches of them; and wet them in a goblet of clear water, and press them and squeeze them out, bunch by bunch, with your fingers. Then trim them with a little pair of scissors; and when you have made up quite a number of bunches, put enough of them together to make up the size you want your brushes; some to fit in a vulture’s quill; some to fit in a goose’s quill; some to fit in a quill of a hen’s or dove’s feather. When you have made these type, putting them together very evenly, with each tip on a line with the other, take thread or waxed silk and tie them up well with two bights or knots, each type by itself, according to the size you want the brushes. Then take your feather quill which corresponds to the amount of hairs tied up, and have the quill open, or cut off, at the end; and put these tied-up hairs into this tube or quill.

Continue to do this, so that some of the tips stick out, as long as you can press them in from outside, so that the brush will come out fairly stiff; for the stiffer and shorter it is the better and more delicate it will be. Then take a little stick of maple or chestnut, or other good wood; and make it smooth and neat, tapered like a spindle, and large enough to fit tightly in this tube; and have it nine inches long.”

### **My Process**

#### Supplies

Feathers

Tail (squirrel, ermine, mink, marten)

Wooden stick for handle

Fish glue

Waxed silk thread

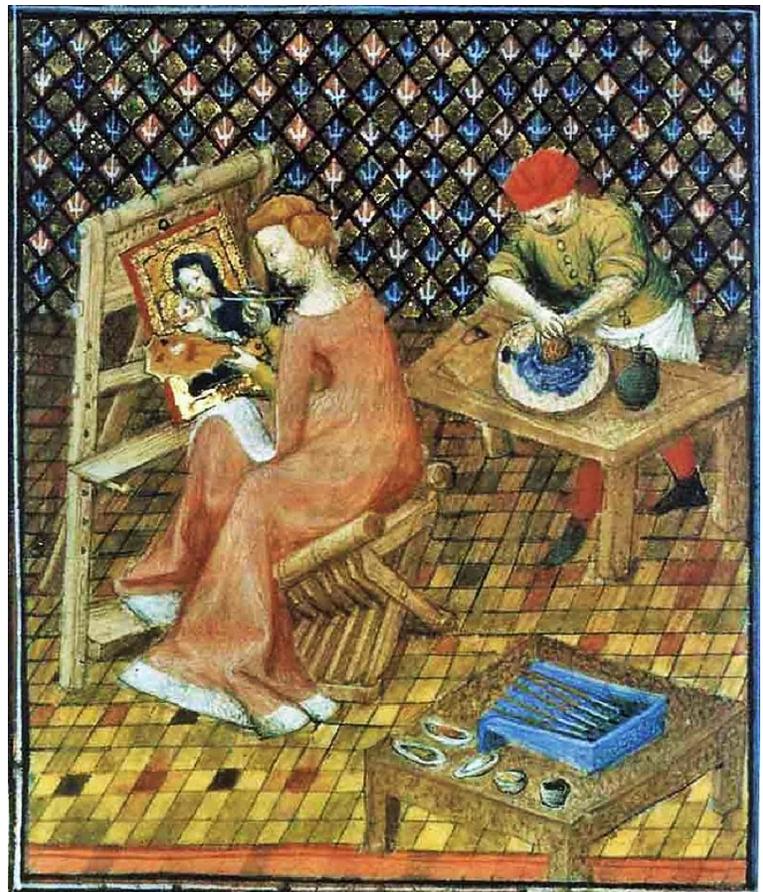
Water

Scissors

Sandpaper

Large needle

Cup of water



2Unknown Artist from Giovanni Boccaccio (1313-1375) *De claris mulieribus*, Anonymous French Translation, *Le femmes nobles et ronomees*. France c 1440 British Library Autoportait sur bois.

## Parts of the Paintbrush

Handle: made of wood. I have shaped these from sticks I bought in a craft store.

Brush tip: In period I have mostly seen mention of minever, but I mainly used squirrel due to cost. Furs of all kinds can be purchased on Amazon or Etsy.

Ferrule: the tube that connects brush tip and handle. Medieval sources say that the ferrule is made of a feather quill. You can order all kinds of feathers on Amazon. I have duck and guinea hen feathers.

## Process

1. Cut the ferrule from the shaft of a feather. Use the size of feather appropriate for the size of the brush. Try to cut a portion about an inch or less in length and as open as possible. Cut both ends off of the portion of feather shaft so that you have a hollow tube. The easiest way is to cut off the tip of the feather first and then hold the tube while cutting the feather near where the barbs start so that the tube will not go flying when the cut is made. Use a large needle to clean out anything from the center of the feather shaft.
2. Gather the hairs from the tail and cut them off. I tried pulling them out of the tail as Cennini instructs but was unsuccessful. Try to shape the hairs into the desired shape. Wet the hairs in water. The water will make the hairs stick together and they will be easier to work with.
3. Tie the hairs together with waxed silk thread. Thread tails should be left after tying the knots. If the hairs are too loose in the ferrule, tie a few more knots or wrap the thread around the hairs more and then tie knots.
4. Thread the loose ends of the thread through the ferrule and then pull the bundle of hairs into the ferrule or try to fit the pointed end of the brush tip through the feather tube. When the hair bundle fits tightly within the ferrule, cut off the long ends of the threads and any fur that sticks out.
5. At this point add a little fish glue to anchor the hair bundle into the ferrule.
6. Fit the handle into your ferrule. A little sanding may help the handle fit into the ferrule better. When the handle fits, put a small amount of glue on the end of the handle and then put it into the ferrule.
7. The creator may want to trim the hairs a little to give the brush the length and shape brush desired. I try to avoid trimming the hairs because the hairs are tapered and trimming removes the nice taper of the brush. The hairs are also thicker farther up the hair and result in a less fine brush tip.

## Variations on the Process

I tried a couple of treatments to the feathers to see how heat and water treatments affected the usefulness of the feather as a paintbrush ferrule and experimented with “cooking” the tail to see if it changed the usefulness of the hair for paintbrushes. I also experimented with making my own handle from a stick.

### Dutching Treatments on the Feather Shafts

I had heard of treatments that people who make quill feathers use to strengthen the feathers they use. Referred to as “dutching” these treatments involved either simply soaking the feathers in water or soaking the feather in water and then heat tempering the feather. Though frequently used within the SCA, these tempering techniques are not found in literature until the mid-eighteenth century.<sup>7</sup> I was intrigued as to how a harder feather shaft would work as the ferrule of a paintbrush so I soaked five feathers in water over night and left five unsoaked. In the morning I followed instructions I had found on heat treating the feathers.<sup>8</sup> I heated a can of sand in the oven at 350 degrees for 20 minutes. After the 20 minutes I removed the can and immediately stuck the five soaked feathers and the five unsoaked feathers in the sand and allowed them to remain in the sand until the sand was completely cool.

I tried using a knife and a scissors to cut the three types of feathers: those that had no treatment, those that had been heat treated, and those that had been soaked in water and then heat treated. The untreated feathers were easiest to cut and split less often than those that had been treated with heat and with heat and water. I found it at times impossible to cut the treated feathers with the knife and when I used the scissors the feather shafts would split most of the time, making them unsuitable for paintbrush ferrules. The treatments made the feather shafts too hard and brittle to use. I also found that the larger the feather, the more likely that the shaft would split while cutting.

I have lately been using feather shafts that have been soaked in water but not dried. The feather shafts do not split if the feather shaft is still wet.



*3 Feathers soaking in water overnight.*



*4 Feathers during heat treatment in hot sand.*

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<sup>7</sup> Calderwood Aug 29, 2015.

<sup>8</sup> Li, Cutting Quill Pens from Feathers

## Fur Treatments

I was curious as to the effect that “cooking” as mentioned by Cennini would have on the suitability of the fur for paintbrush tips. Cennini may have advocated for “cooking” the tails to remove vermin, but I didn’t know if it would have another effect. I tried using four kinds of fur for the paintbrush tips: ermine fur, squirrel fur from a fly making supplier, squirrel fur from an Etsy supplier, and squirrel fur from an Etsy supplier that I then boiled. I tried ermine tails since that is probably what Cennini meant by minever. I used squirrel for the rest of the brushes because ermine is more expensive and there is more usable fur on a squirrel tail as opposed to the tiny ermine tail. I was unsure of what treatments had been applied to the squirrel tail that I purchased on Amazon so I also found a supplier on Etsy who had not treated the squirrel tail other than allowing it to dry. I took one of the untreated Etsy tails and boiled or “cooked” it. I brought a pot of water to a boil and then dropped the squirrel tail into it. I boiled the tail for a few minutes. I then removed the tail from the water and allowed it to completely dry.



*7 Squirrel purchased from Etsy*



*6 Boiling the squirrel tail.*



*5 The boiled squirrel tail was allowed to dry.*

After the one tail was boiled and dried, I made a brush head from each of the four tails. The squirrel tail from Amazon and the untreated Etsy squirrel tail were the hardest to work with. The hairs were light and fluffy and wanted to fly away. The boiled squirrel tail was easier to work with. The boiled hairs seemed a bit stiffer and less fluffy. I’m not sure if the heat of the boiling affected the proteins in the hairs or removed natural oils. The ermine hairs were the nicest to work with. The hairs in the ermine tail were stiffest but soft and did not tend to stick together like the squirrel hairs. I can understand why



9 From left to right: Etsy squirrel tail, boiled Etsy squirrel tail, Amazon squirrel tail.

8 Brush tips made from each squirrel tail before the hairs and threads were trimmed.

Cennini suggested minever for paintbrushes due to how soft and stiff they were and I found that boiling does improve the quality of the hairs for brushes. I painted the handles of the paintbrushes to color code them to tell what treatments were used on each brush.



10 Brushes from top to bottom: boiled Etsy tail, Etsy tail, Amazon tail, ermine tail.

## Different Furs

I found two kinds of weasel, mink and marten, tails on Etsy. The technique is a bit different using a fur with guard hairs like mink or marten as it is with a fur with one length of hair. First I separated a small clump of fur. Holding the fur by the top I cut the fur as near the skin as possible. After cutting the fur, I needed to remove the soft underfur. I was able to hold the clump by the guard hairs and then carefully pull out the short, fuzzy hairs. I laid the guard hairs on a sheet of paper so that the cut part of the hairs was on the same end since the uncut part of the hair is tapered and makes a better brush head.



When I had enough hairs, I gathered them together and put them uncut end down into a small vial. I then tapped the vial so that the hairs would be even on the brush tip. After the hairs were even, I carefully rolled the vial so that the clump of hairs would roll out. I tied the clump of hairs and then dipped them in gum arabic solution to help the hairs stick together. I allowed the brush head to dry before inserting it into the ferrule.



*Figure 12 The hairs are placed into a vial and then the bottom of the vial is tapped until the ends of the hairs are even.*



*Figure 11 The brush heads are tied with waxed silk and then dipped in gum arabic solution to help the hairs stick together.*

In the future I would like to try more types of fur mentioned in the Brussels Manuscript. I attempted to find sable fur like that used in the best modern paintbrushes, but sable are highly regulated to preserve populations<sup>9</sup> and I found none online.

### Shaping the Handle

For most of the paintbrushes I made I used a modern power sander to shape sticks purchased at a craft store. I was curious as to how much work would go into the shaping of a handle so I followed Cennini's instructions. I found a maple twig, as straight as possible, and cut it down to the nine inches mentioned by Cennini. I then used a knife to whittle the twig into a rough spindle shape. To make the handle smoother, I used some sandpaper to smooth the stick. While not difficult, the process was slow. I prefer a thinner handle, but I think a thinner handle would be harder to shape and not break. I also prefer a shorter handle than Cennini's nine inch long handle.



*13 Brush made from squirrel tail and handmade handle.*

### Glue

Cennini doesn't mention using glue to secure the brush tip into the handle, but I've found that it helps. I used fish glue because I know it is something a period scribe may have on hand for gilding. I have seen some illuminations that appear to have thread tied around the ferrule to help secure the brush tip and handle and some illuminations that lack thread wrapping.

### Conclusions

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<sup>9</sup> Series 7, From our hands to yours, Winsor & Newton.

Although laborious, the process of creating a period paintbrush is rewarding. Treatments to strengthen the feather tube are wasted effort and result in tubes that spit too readily. Boiling the fur for the brush tip results in a better, stiffer brush tip. Ermine is a superior fur to use for brush tips as opposed to squirrel. I look forward to trying different furs in the future. While interesting, shaping a paintbrush handle from a twig is a time intensive process that results in a nice rugged looking paintbrush. The brushes so far are acceptable for liner brushes, but I have yet to get a good short brush good for detail work or a wide brush for laying down large areas of color.

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