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SOME NEW INSIGHTS ABOUT 16<sup>TH</sup>  
AND 17<sup>TH</sup> CENTURY *VETRO A RETORTOLI*

Last year we were fortunate enough to have a collection of over 40 *filigrana* glasses in our shop. *Filigrana* glass is glass made out of canes, decorated with, in this case white, glass threads. There are three types of *filigrana* glass: *Filigrana a fili*, *filigrana a retortoli*, *filigrana a reticello*. *Filigrana a fili* is glass made with canes of clear glass with a single white thread in the middle. *Filigrana a retortoli* is glass made with canes of clear glass decorated with white twisted threads. *Filigrana a reticello* is glass with a diamond-shaped pattern of white threads, often with small air bubbles in-between the crossed threads. The pattern looks like a net (the Italian word ‘rete’ means ‘net’). Having so many of these glasses was a real opportunity. It offered us a unique chance to some real in-depth research, to look at them and study them, and above all, to compare them with each other.

We decided to write a book about the collection, in honour of the collector. The core of the collection consisted of glasses made in the sixteenth and seventeenth century.

Besides cataloguing all the glasses, I wanted to introduce them in two chapters, dealing first with the history and secondly with the technique. And we made a film with glass artist Marc Barreda about how the glasses were made. The film will be on show on the site of the ivsla ([www.ivsla.it](http://www.ivsla.it)) and on the website of our shop ([www.frideslameris.nl](http://www.frideslameris.nl)) to illustrate the texts about the techniques of making *filigrana* glass.

So much has been written about *filigrana* glass, that I thought I would mainly register some facts and illustrate them with beautiful

pictures. But much to my surprise I actually discovered some interesting things.

For the second chapter, about the techniques used in making these glasses, I started by reading Eduard Schmid<sup>1</sup>. His second book on making glass is partly dedicated to Venetian techniques. In delightful drawings, he sketches the various ways *filigrana* glass was and is made. Reading this furnished me with the appropriate terminology and the names of the various tools used in making glass, which was very useful in the later conversations I had with three glassblowers and artists. I spoke with Davide Salvatore, a glass artist of Murano, whose family has been working in glass since the sixteenth century, with Bill Gudenrath, the famous glassblower at the Corning Museum of Glass, who studies old glass techniques and Marc Barreda, an American glass artist who works in The Netherlands. They shared their knowledge, experience and expertise with me without reservation. Thanks to the lessons and demonstrations given by these glassblowers and my discussions with them, I discovered several things that could turn out to be helpful in dating *filigrana* glass. In this paper I would like to show you two of them. Both findings concern *vetro a retortoli*, made with or without *vetro a fili* (Figs. 1-2).

Even though in most English literature the term *vetro a retorti* is used, I choose to use, like the Italian writers usually do, the original term used by the Serena brothers, who first mentioned the technique in 1527: (*vetro a*) ‘retortoli’<sup>2</sup>.

From a technical point of view it is possible to divide *vetro a retortoli* in two groups. Some glasses consist of two layers, others only of one. As I said before, *filigrana* glass is made with canes. The glasses consisting of two layers have a layer made of *crystallo* glass and a layer of canes. The glasses consisting of a single layer are only made with canes.

This is a result of how they were made.

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<sup>1</sup> Schmid 1997: 133-211.

<sup>2</sup> Archivio di Stato di Venezia. Consiglio dei X, Parti Comuni, filza 6, n. 84. In Zecchin 1989: 213.

There are several different ways to make glass having two layers. It's still not clear (and a much debated issue) what method of manufacture was used in the early days.

I will explain here one of these techniques, called: pick up on a bubble.

#### Pick up on a bubble

Canes are put in the desired pattern next to each other on a *pastorale* (an Italian term for the metal tool that picks up the plate or cane marver on which canes are laid out).

This group of canes (*la piera*) is fused together. The glassblower blows a glass bubble and rolls it over the canes picking them up.

By repeated heating in the oven and shaping on the marver, the bubble with the canes around it is made homogeneous. Now you have a bubble with a clear base and striped sides. To be able to make a glass entirely out of *vetro a filigrana*, it is necessary to get rid of the clear base. While the assistant is blowing, the master is squeezing the canes together just above the clear base and then cuts it off. This leaves a small ball of glass which is thrown away and a striped bubble. This bubble can be handled to make a glass.

This is one of the techniques a glass with two layers can be made.

To make a glass with only a layer of canes another technique is used: pick up on a collar.

#### Pick up on a collar

Canes are put in the desired pattern next to each other on a *pastorale*. This group of canes is fused together. The glassblower takes them up on a collar, a clear circle of glass on the end of a blowpipe, by rolling up the canes on the edge of the collar. Now you have an open cylinder of canes on a blowpipe. To make a bubble of it, the glassblower closes the open end and cuts off the excess of glass. Now the bubble can be handled like every other bubble to make a glass.

The difference between a glass made with two layers or in a single layer is clearly visible. Not easy to see, but a trained eye can see the difference. It's easier to feel it. If you touch a glass made

out of two layers, it has ribs of the canes on the outside, whilst it is smooth on the inside, where the *cristallo* layer is. A glass made out of one layer of canes has ribs of the canes on both sides.

Up until a few months ago, it was thought that both techniques were used alongside one another throughout the sixteenth and seventeenth centuries<sup>3</sup>.

But, comparing the glasses with one another, it turned out that the early glasses, made in the sixteenth and most of the seventeenth century, all consisted of two layers (Fig. 1).

Only the glasses made around 1700 were made in a single layer (Fig. 2).

These are glasses of a special type, that I called ‘The Rosenborg castle type’. In 1709 this type of *filigrana* glasses was presented to the King of Denmark, when he visited the city of Venice. Back home, the King made a special glass room in his castle in Copenhagen, the Rosenborg castle, for all his new glass. Here they are still on show, in a glass room that has remained unchanged since the early eighteenth century. Usually a date around 1700 is accepted for this type of glass<sup>4</sup>.

Of course I had to check at Rosenborg castle in Copenhagen itself. The ‘pick up on a collar technique’ for the glasses with only one layer could also have turned out to be a nineteenth century technique, which would have meant that our glasses were made in the nineteenth century. Nobody could tell me how many layers these Rosenborg glasses were made from, so I had to go there myself. I made an appointment at Rosenborg castle and was allowed to enter the glass room.

It turned out that the *filigrana a retortoli* glasses there were made out of a single layer, which confirmed our theory.

Later I spoke to the Dutch archaeologist Jaap Kottman, who is specialised in sixteenth and seventeenth century pits and who regularly finds shards belonging to *filigrana* glasses. I told him about my findings and he confirmed them. He was even very much

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<sup>3</sup> See for example Dorigato 2002: 96-99 and Gudenrath 2012: 262-263 and all the glassblowers I did talk to.

<sup>4</sup> Boesen 1960.

surprised to hear that some *filigrana* glasses were made from a single layer, for the only type of shards he finds all comprise two layers. Since he is working only with sixteenth and seventeenth century glass, this is now what you would expect. Another proof that the early glasses consist out of two layers.

It provides us with a tool for dating *filigrana* glass. When in doubt one can check out of how many layers a glass is made. If a glass is made with two layers, canes and *cristallo*, it can be sixteenth or seventeenth century.

If it comprises a single layer with only canes, it was probably not made earlier than around 1700.

Now for the second thing I wanted to show you.

There are many types of canes (Fig. 3). In this collection alone no fewer than twenty-seven different types of canes have been used<sup>5</sup>.

When I talked with Davide Salvatore, he mentioned in passing that there are two types of canes, 'canne con una decorazione esterna e canne con una decorazione interna', meaning canes with external decoration and canes with internal decoration.

The base of every type of *vetro a retortoli* canes, are *a fili* canes, with one thread in the middle. All patterns are made with them.

#### *A fili* canes (Fig. 3a)

During the Renaissance *a fili* canes are made with three layers: *cristallo/lattimo/cristallo*. To make an *a fili* cane a glassblower takes a dot of hot colorless glass on a punty or blowpipe. It is marvered into a cylinder and covered evenly with white glass. The white glass is then covered with colorless glass again. In the meantime an assistant prepares the post, a punty with clear glass to attach to the other side of the cylinder with cased white glass. The glassblower attaches the post on the other side of the glass cylinder and gives the punty back to the assistant. Now they pull the glass until it's a long thin cane with a white thread in the middle. They put it on wooden paddles that are laid out on the

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<sup>5</sup> Laméris 2012: 20-23.

floor. The punties are broken off of the cane. Once the cane has cooled it is ready and can be broken in several pieces of the same length to work with.

Canes with external decoration (Fig. 3b)

To make a cane with an external decoration, the glassblower puts several *a fili* canes next to each other on a flat surface. They are put into the oven to fuse together. The glassblower measures the width of the piece of canes and takes a gather of clear glass, that is marvered into a cylinder and picks up the canes by rolling them up from the beginning to the end, where they come together.

Then the canes are marvered into the core of clear glass and the whole piece of glass is thus shaped into a cylinder. In the meantime an assistant prepares the post, a punty with clear glass to attach to the other side of the cylinder. The glassblower puts the post on the other side of the glass cylinder, twists and pulls it as far as he can and gives the punty back to the assistant. Now they pull and twist the glass until it's a long thin cane with twisted threads on the outside. This type of cane is called *canna a rete*, a *rete* cane. ('rete' means 'net'). Other canes with external decoration do exist. The glass on picture 1 on made with two types of external canes: a *canna a rete* and a cane with a band of five threads.

Canes with internal decoration: *canna a ballottini* (Fig. 3c)

Instead of twisting around the exterior of a cane, canes with internal decoration twist around their own centre inside the cane. They are called *canne a ballottini*, which means 'canes with little balls' because of the decoration that looks like a row of little balls. To make *ballottini* some *a fili* canes are put together on a flat surface. They are fused together, taken on a punty with a flattened broad piece of glass and then covered with clear glass. This is marvered into the shape of a cylinder. In the meantime an assistant prepares the post. The glassblower puts the post on the other side of the glass cylinder and gives the punty back to the assistant. Now they twist and pull the glass continuously until it cools down and shows a row of little balls made out of several white threads. Canes with *ballottini* are clearly visible in the glass at the right of picture 2.

Back home I made a new division of the canes used for the glasses in our collection. I had made designs of all the different canes that were used in the glasses and I divided them into *a fili* canes, canes with external decoration and canes with internal decoration. Alongside I put the numbers of the glasses, which I had ordered chronologically<sup>6</sup>.

It appeared that the canes with the *ballottini*, with the internal decoration, were only used in the glasses of the Rosenborg castle group (Fig. 2).

Up until now it was known that these glasses had much more elaborate decorations than the earlier ones. But what exactly this difference was, was unknown.

I studied this collection, comparing it with glasses held in various museum collections and with pictures. I examined over 900 *filigrana* glasses. And this observation seems to hold true, however strange it might be: before 1700 or thereabouts, no glasses with *ballottini* appear. Until now this had not been remarked, and why it should be so no-one knows. Maybe the glassmakers of the time had to stick to certain rules, or maybe it simply didn't occur to them to make canes with *ballottini*, I don't know. However, it does give us another tool in dating *filigrana* glass.

The early glasses are all made with canes with external decoration. Usually the base is *canna a fili* (Fig. 3a) in combination with *canna a rete* (Fig. 3b).

We know now that the canes 'a facete a retortoli a fil' that the Serena brothers were making in 1527 must have been the canes made with external decoration.

Other external decorations are known, but are much rarer. In our collection there were only a few, like a bowl with a combination of *canna a rete* together with an external decoration of a band of five threads (Fig. 1).

Once the canes with the *ballottini* (Fig. 3c) were discovered, it opened up lots of new possibilities. For example, internal decorations can be combined with external decorations in a single

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<sup>6</sup> Laméris 2012: 20-23.

cane. I called these canes, *canne miste*, or “mixed canes”<sup>7</sup> (Fig. 3d).

The *canna a rete* was not abandoned. Instead, it’s usually the base cane for the glasses with *ballottini* (Fig. 2, glass to the right). *A fili* canes become very rare. Whilst the earlier glasses usually comprise a combination of one or two types of cane (Fig. 1), the Rosenborg-type glasses are mostly made with three types of canes (Fig. 2).

The gift including the glasses presented to King Frederik IV of Denmark in 1709 was more valuable than all the gifts given by the government of Venice to royal visitors during the whole seventeenth century put together. Back then Frederik was not the only one to be given a large number of *filigrana* glasses. While his is the only collection still intact since it was received, other royal visitors were gifted with collections of comparable size<sup>8</sup>.

I guess that such gifts, including loads of *filigrana* glasses, were a response to the threat posed by the clear glass that was being made in Bohemia and in England, which had undermined the demand for *cristallo* glasses made in Venice. But the Venetians didn’t only have *cristallo*, they had another weapon at hand: *vetro a filigrana*. So at a time when these glasses weren’t made outside Venice any longer, the Venetians developed new ways of making this type of glass, rendering them even more elaborate and attractive.

This is illustrated beautifully in the Italian painting ‘Still life with a parrot’ made by Gabriele Salci in 1716 (Lichtenstein, The Princely Collections, Vaduz-Vienna). Here we see an early eighteenth century beaker which represents the newly invented *Kreide* glass made in Bohemia. It kept its transparency even when blown thick-walled, so it could be used for wheel engraving. Next to it is a *filigrana* glass. It does not belong to the collection of the Danish King, but he had comparable glasses. This *filigrana* glass, this time made out of *vetro a reticello*, is a thousand times more extravagant and desirable than the beaker and makes the Bohemian glass fade away.

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<sup>7</sup> Laméris 2012: 22-23.

<sup>8</sup> Boesen 1960: 82, note 36.



*Acknowledgments*

Thank you for sharing part of my investigations into *filigrana* glass. I became so inspired that even now most of the glasses in our catalogue have been sold, I'm thinking of continuing my research. There are many more things about *filigrana* that I would like to investigate. Starting with the question why glassmakers in the sixteenth and seventeenth centuries confined themselves almost exclusively to making white rather than coloured *filigrana* glass.

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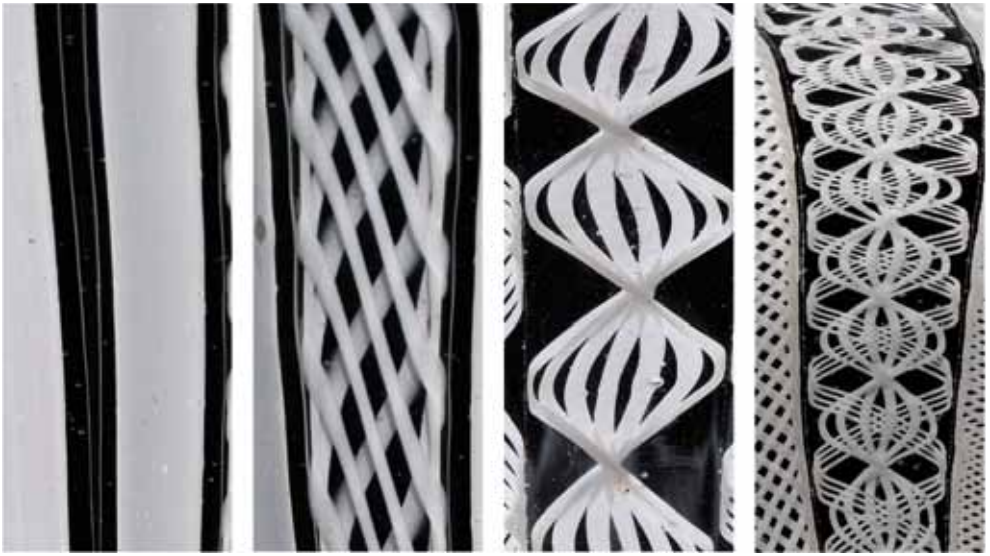
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Fig. 1 - Large twelve-lobed bowl, Venice, second half of the 16<sup>th</sup> century. Height: 9 cm, diameter bowl: 27 cm, diameter foot: 16 cm.



Fig. 2 - Two wineglasses, Venice, around 1700. Height: 8.3 and 16.9 cm.



a.

b.

c.

d.

Fig. 3 - a) *A fili* cane; b) Cane with external decoration: *canna a rete*; c) Cane with internal decoration: *canna a ballottini*; d. mixed canes.