

Note from the Making and Knowing Project:

This essay was written for “The Art Technological Source,” an 8-week graduate course at the University of Amsterdam offered by Dr. Marjolijn Bol in 2015 and 2016 to students enrolled in an MA program in either Technical Art History or Conservation and Restoration. Students worked on various recipes from BnF Ms. Fr. 640 on the following five topics: 1) tracing and painting on glass, 2) yellow dyes and their applications, 3) dragon’s blood, 4) painters’ varnishes, and 5) sieves.

This is an un-edited student paper that relies on an earlier state of the Making and Knowing Project’s transcription and translation of Ms. Fr. 640. For an updated version of the text, see:

Making and Knowing Project, Pamela H. Smith, Naomi Rosenkranz, Tianna Helena Uchacz, Tillmann Taape, Clément Godbarge, Sophie Pitman, Jenny Boulboulle, Joel Klein, Donna Bilak, Marc Smith, and Terry Catapano, eds., *Secrets of Craft and Nature in Renaissance France. A Digital Critical Edition and English Translation of BnF Ms. Fr. 640* (New York: Making and Knowing Project, 2020), <https://edition640.makingandknowing.org>. DOI: <https://doi.org/10.7916/78yt-2v41>.

The Art Technological Source
Annotation Winter 2016

The application of monochrome backgrounds in reverse glass painting

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The application of monochrome backgrounds in reverse glass painting

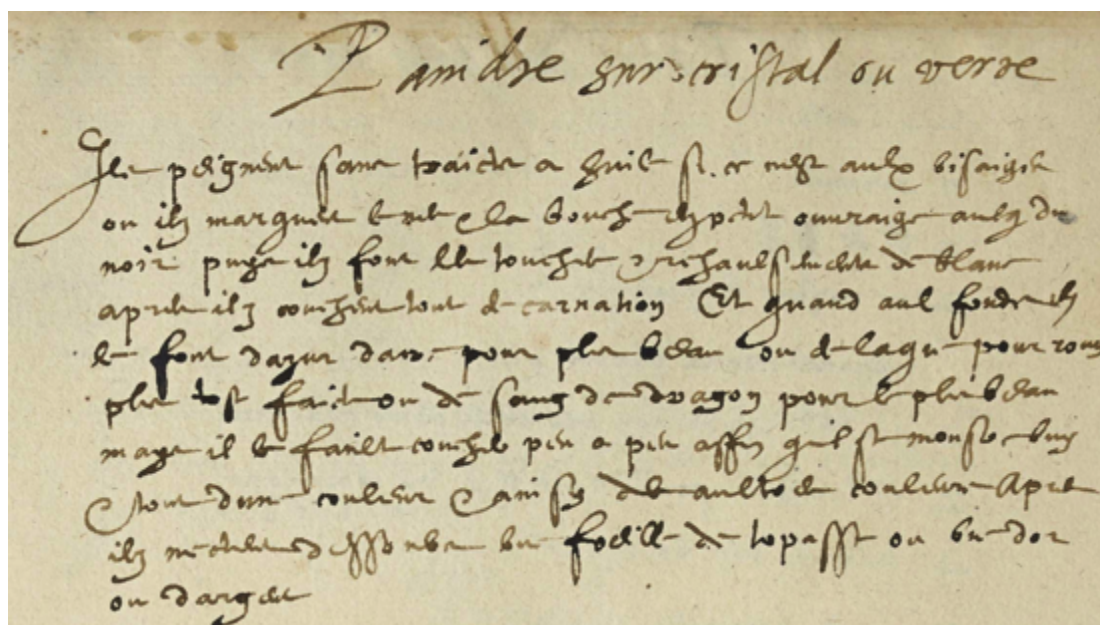


Figure 1: Original manuscript BnF Ms. Fr. 640 folio p102v: Painting on crystal and glass¹

Introduction to reverse glass painting

On folio p102v from BnF Ms. Fr. 640, a short commentary is given on the process of painting and gilding on a glass plane. Although the author does not explicitly refer to it as reverse glass painting, it is probably a similar process that is described.

The art of reverse glass painting comes in many forms, and themes vary from modern, classic, religious or decorative. The art is practiced by both professional artists and amateurs. The above shown manuscript however most likely refers to the fabrication of religious icons.

¹ **Peindre sur cristal ou verre**

Ils peignent sans traicts à huile si ce n'est aulx visaiges, ou ilz marquent le nez & la bouche en petit ouvraige avecq dunoir, puis ilz font les touches & rehaullements de blanc, après ilz couchent tout de carnation. Et quand aul fonds, ilz le font d'azur d'Acre pour plus beau, ou de laque pour rouge plus tost fait, ou de sang de dragon pour le plus beau. **Mays il le fault coucher peu à peu affin qu'il se monstre uny & tout d'une couleur, & ainsy des aultres couleurs.** Après ilz mectent dessous une fœille de topasse ou une d'or ou d'argent.

Painting on crystal or glass

They paint without any traces of oil, except for faces where they outline the nose and the mouth in very fine black work. Then they make strokes and highlight them in white, and then they apply a coat of flesh-tinted color. As for the background, they do it in natural azur from Acre to make it more beautiful, or lacquer for a quickly-done red, or for a finer red, dragon's blood. **But it is necessary to apply it little by little so that it is smooth and of one color, and in the same way for other colors.** Then they apply underneath it, a leaf of topaz, gold or silver.

In short the idea is that a (religious) figure is painted on the backside of a glass plate. This is done in reverse order, starting with the (opaque) black outline and details then proceeding with the (opaque) skin and clothes and finishing with a uniform (translucent) background (usually blue or red).

The whole of the background is then backed with a reflective sheet of gold or silver leaf. The image is then observed from the other unpainted side of the glass.

The desired effect using the described technique is most likely that of coloured glass or precious stones set in gold but the additional reflection of gold or silver leaf combined with the magnifying properties of clear glass made reverse glass painted icons very suitable for placement inside shrines, altars and crypts, where light is low.²

Subject of research

To allow for an undisturbed passage of light and uphold the illusion of precious stone or colored glass, the author stresses his reader to “paint without traces of oil”: In other words, do not leave brush strokes! This is done by applying the paint “*peu à peu*”, or “little by little”.

The aim of this short annotation is to determine the tools and techniques 16th century glass-painters had at their disposal to produce the uniform monochrome translucent background that is spoken of in BnF Ms. Fr. 640.

In several experiments, I tried to actually reproduce the regular background colour the manuscript refers to. In addition to these experiments, I consulted several art technological sources in search for the tools and techniques that could have been used for background application.

An important assumption made while writing this annotation was that the fragment from BnF Ms. Fr. 640 actually described the art of glass painting in the 16th century – and that these craftsmen actually painted without traces of oil – instead of prescribing to his readers what he, the author, thought of as the best method. A small addition to this is that we have no example of reverse glass art that actually meets with the author’s approval. In other words, we can only speculate about what the author considers painting without traces of oil.

The relevance of this annotation is of a dual nature: Firstly, to reproduce recipes commented upon by the author of BnF Ms. Fr. 640 gives an insight in his authority on the subject: Are his commentaries on monochrome backgrounds realistic? And are we dealing (on folio p102v) with an author practitioner, or just an author? In the meantime I will use the term author.

On a broader level, by placing this source in context with 16th, 17th and 18th century art technological sources, one can interpret the tools and techniques to produce reverse glass art as innovations in art production. Do artists look beyond the traditional brush? Is the choice for a glass panel just an aesthetical one? Can reverse glass paintings be seen as a response to a newly emerging ‘mass buying audience’ of a low-end art market?

² Frieder Ryser, *Verzauberte Bilder* (München: Klinkhardt & Biermann 1991), 36. Daniel Thomas Howells, “Late antique gold glass in the British museum” (DPhil thesis, University of Sussex, 2010), 96.

Experiment 1: Following BnF Ms. Fr. 640

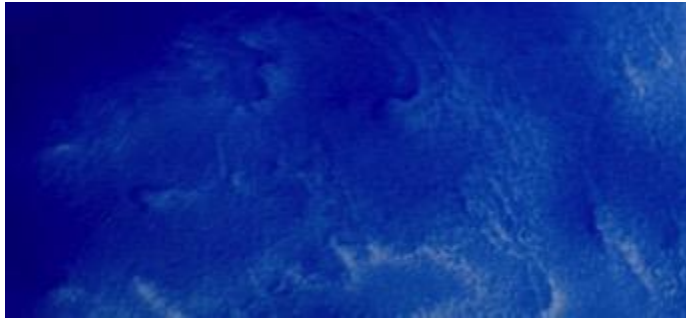


Figure 2: 'Regular' application with paint brush (all photographs by the author unless specified otherwise)

In this chapter the results of the first reconstruction of painting on crystal and glass are shown. In the above depicted image, a synthetic ultramarine pigment³ in oil of turpentine⁴ was applied on a glass plate using a synthetic paint brush.

It can be observed that the vitreous substrate prevents pigments from sinking in and that pigments continue to follow the strokes of the painter's brush across the substrate. The result is a clouded pattern made of different tones of blue, which is undesirable when imitating colored glass or precious stones.



Figure 3: Application peu à peu

Even when applying paint *peu à peu* – as advised in BnF Ms. Fr. 640 – a slightly different, but still irregular paint layer is formed with the additional disadvantage that automatically even more paint is used in this way.

These irregularities in the morphology of the paint layer and overall distribution of pigments as shown in the examples scatter passing rays of light. This results in diffuse colors instead of the desired lively sparkle a precious stone possesses.

³ For budgetary reasons, synthetic ultramarine pigment was used instead of the prescribed natural azure from Acre.

⁴ The author does not prescribe a specific oil, so oil of turpentine was chosen for its drying properties.

Experiment 2: Beyond BnF Ms. Fr. 640

When applying paint on glass with a brush, with every stroke of the painter, every single hair of the brush leaves its trail in the paint layer. When this is multiplied by amount of strokes that are made when using a small brush, it is clear why the two first examples were unsuccessful.

The use of a larger monoform tool leaves less traces and requires less movement across the glass surface and should therefore result in a more uniform paint layer. This hypothesis was put to the test in an experiment, using the same pigment and binding medium as in experiment 1. Displayed below are four application tests done with a fine sponge, a pure cotton textile cloth, a finger and a palette knife

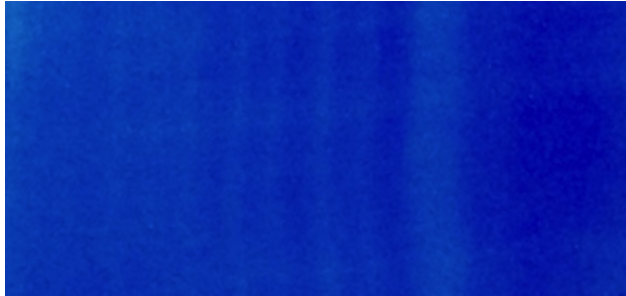


Figure 4: Sponge application

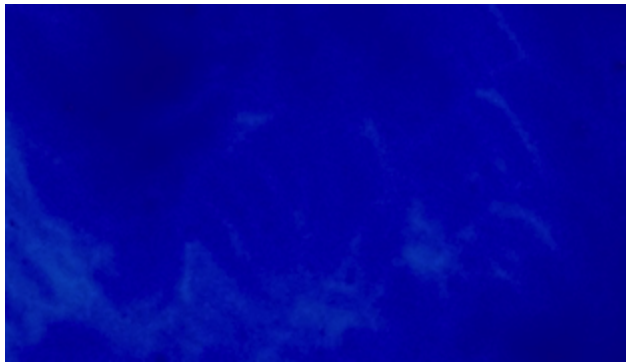


Figure 5: Cotton cloth application

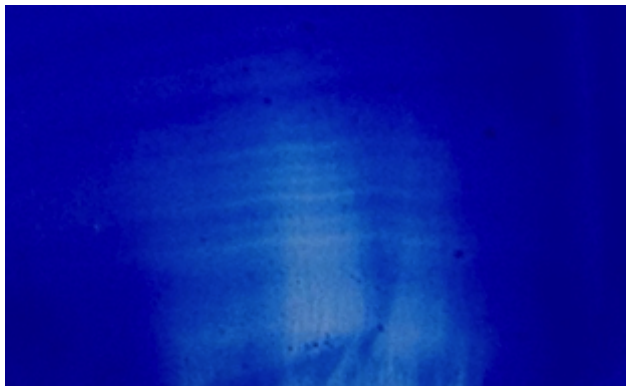


Figure 6: Finger application



Figure 7: Palette knife application

The best results are achieved when the paint can be distributed onto the glass in a flowing continuous movement.

Cotton cloth will keep absorbing paint so that new paint will have to be introduced all the time, disrupting the application and resulting in irregularities. The human finger can be a very precise tool due to the control and tactile perception the human finger has. As can be observed, however, the human finger is an irregular shaped tool that leaves a trail in the paint layer.

A modern conservator's cleaning sponge⁵ leaves few traces and can apply a very thin layer of paint that does not drip and dries quickly. It is however highly unlikely that 16th century craftsmen had access to this modern tool.

On the other hand, the palette knife certainly was available in that era and moreover had very good results in the regularity in tone and morphology of the paint layer.

These four experiments produced some promising results but except for the conservator's sponge, all three of the tested application techniques required large amounts of paint applied on the glass. Apart from the high cost of the paint, these thick layers would take months to dry. The craftsman could not display his work upright or sell it because his paint would immediately start running down.

The tools and techniques of glass painters as presented by art technological sources

Either with the use of more modern tools, or with the help of BnF Ms. Fr. 640, the technique behind a fully satisfying monochrome background has not yet been discovered. To supplement the practical knowledge gained from the first two experiment sessions and to flesh out the limited commentary in BnF Ms. Fr. 640 a survey of relevant art technological sources is given in this chapter.

The sources that will be consulted are:

Il Libro dell'Arte by Cennino Cennini (Italian 16th century),

Schilder-Boeck by Karel van Mander (Flemish/Dutch early 17th century),

Ars vitraria experimentalis by Johannes Kunckel (German 17th century),

De groote schouburgh der Nederlantsche konstschilders en schilderessen by Arnold Houbraken (Dutch early 18th century)

⁵ PVA-sponge/eraser

De levens-beschryvingen der Nederlandsche konst-schilders en konst-schilderessen by Jacob Campo Weyerman (Flemish/Dutch 18th century)

Like BnF Ms. Fr. 640, the consulted sources are concise in their commentaries and recipes. These books were probably read by craftsmen who usually only needed a few details but only needed a few details to supplement their knowledge of their trade. These details, however, can still reveal a great deal about the tools used by craftsmen.

In the second book of Cennino Cennini's *Il Libro dell'Arte*, chapters 63-66 are an introduction to the fabrication of the painter's tools for paint application: soft brushes of miniver and more rigid brushes of hog's bristle.⁶

However, no advice about which brush is most suitable for which purpose is given by Cennini. In chapter 171 about gilding and painting on glass, Cennini mentions the use of a fine miniver brush to apply the oil paint but nothing is said about application techniques or alternative tools. Cennini simply specifies to "just let it dry in the sun." Furthermore, in instructing his reader on glass painting, Cennini does not distinguish between fired and unfired painting.⁷

In Karel van Mander's *Life of Goltzius* it is described how Henricus Golzius (1558 –1617) applies a *glacis* layer by dabbing the paint on the surface with his brush, as is common in glass painting (*een manier met den pinceelen te stooten, die by den Glaes-schrijvers ghemeen is*).⁸ This art technological source not only advises a paintbrush when painting on glass, the "*Stooten van den Penceelen*" [dabbing or *pointillé* of the brush] may just be the application *peu à peu* that is advised in BnF Ms. Fr. 640.

In *Life of Goltzius* mention is also made of '*den uytnemenden Glas-schrijver Cornelis Ysbrantsen*'⁹ whose full name is Cornelis Ysbrantsen Kussens (?-1618). Aside from this short mentioning by Van Mander, the techniques or tools of Cornelis Ysbrantsen are not described. However, this particular glazier hails from the school of the brothers Dirk and Wouter Crabeth, which is documented in *De groote schouburgh der Nederlandsche konstschilders en schilderessen* by Arnold Houbraken, and in *De levens-beschryvingen der Nederlandsche konst-schilders en konst-schilderessen* by Jacob Campo Weyerman. In his description of the two glaziers Houbraken cites a poem by Vondel which praises the spirited brush of Wouter Crabeth:

*Offert Wouter met Elias,
Doove verf schynt hemels vier.
Eet hy 't Paaslam met Messias,
Zyn penceel vol aart en zwier, [His brush filled with character and elegance]
Draaft te moediger en stouter.
Stel het beeld op 't Schilders outer.*¹⁰

⁶ Daniel V. Thompson, trans., Cennino D' Andrea Cennini's *Il Libro dell' Arte* (New York: Dover publications, 1960), 40-42.

⁷ Thompson, *Ill Libro*, 111-113.

⁸ Karel van Mander, *Het schilder-boeck* (Utrecht: Davaco Publishers, 1969, facsimile van de eerste uitgave, Haarlem 1604), fol. 47.

⁹ Van Mander, *Schildersboeck*, fol. 47.

¹⁰ Arnold Houbraken, *De groote schouburgh der Nederlantsche konstschilders en schilderessen* ('s-Gravenhage: J. Swart, C. Boucquet and M. Gaillard, 1753 2nd edition), 29.

And in Weyerman's *levens-beschryvingen* (which is for the most part a later copy of Houbraken's work) is referred to glass that is brushed (*Glas (...) dat hij penseelde*¹¹)

In sum, these art technological sources make it clear that despite the problems I encountered in the first set of experiments, the brush is the tool that glass painters used to apply their paint. None of the consulted art technological seem to refer to the use of monoform tools to distribute paint on a glass surface. It must also be mentioned that, beside BnF Ms. Fr. 640, none of the sources explicitly stress that "they paint without traces of oil."

Can one rely on the validity of the consulted sources? Could they have made mistakes in their commentaries due to lack of hands-on experience? For example, when writing about glass painting the author of BnF Ms. Fr. 640 uses "they paint" and "they do" to explain the techniques and materials. He himself is apparently no glass painter himself. And maybe just, as has been noted at the start of this annotation, prescribes a monochrome background instead of describing actual practice?

Cennini is elaborates more on the subject of glass painting and, since he uses the first person in his commentary, he seems to be a practitioner himself. However, he makes no distinction in technique or tool between the cold application of oil paint, and the application of pigments that are fused to the glass in a kiln. This may imply that Cennini only used unfired glass painting occasionally in the context of stained glass windows, and not for the type of reverse glass painting BnF Ms. Fr. 640 writes about.

Van Mander states that he and Henricus Goltzius were well acquainted, so it might well be possible that Van Mander heard about Goltzius's brush technique first-hand. But when Vondel praised Wouter Crabeth's spirited brush in his poem, he might be using the word *penceel* [brush] to symbolically refer to the painter's tools in general.¹² And again it must be stressed that the Crabeths were famous for their fired stained glass creations.

What the aforementioned sources have in common is that they treat a wide spectrum of subjects, as was customary in the 16th and 17th century.

Ars vitraria experimentalis (1679) by Johannes Kunckel is a 600-page treatise only on glass art. The first 400 pages are a German translation of *L'Arte Vetraria* (1612) by Antonio Neri with additional commentation by Kunckel, which are mostly recipes about the making and coloring of glass, and the imitation of gems. The following 200 pages are *Unfehlbaren* [infallible] experiments on stained glass, glass painting and glass blowing allegedly devised and executed by Kunckel.

¹¹ Jacob Campo Weyerman, *De levens-beschryvingen der Nederlandsche konst-schilders en konst-schilderessen* ('s-Gravenhage: de wed. E. Boucquet, H. Scheurleer, F. Boucquet and J. de Jongh, 1729) 206.

¹² Dirck Pietersz. Pers, trans., *Cesare Ripa's Iconologia of Uytbeeldinghen des Verstants* (Amsterdam: Dirck Pietersz Pers, Boeckverkooper op 't Water, recht over de Kooren-merckt, 1644), 350. *Imitatione (Naevolginge, Naebootsinge)*

Een Vrouwe die in de rechter hand een bondel Pinceelen houd, en in de slincker een Momaensicht, en aen de voeten een Aep. Naevolginge wort gespeurt in ygelijcke handelinghe, of dat een yders gemaect werck gelijckt: En daerom wort zy gemaelt met een hand vol Pinceelen, als werckgereetschappen van de konst, naebootster van de verwen, en van de beeldnissen, die de Natuyre en de konst hebben voortgebracht.

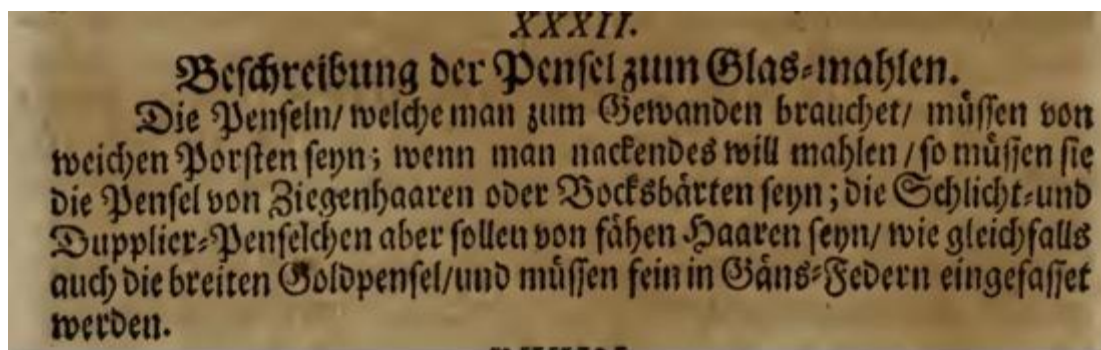


Figure 8: *Ars vitriaria experimentalis*, chapter 32: description of the glass-painter's brush ¹³

Similar to the other four art technological sources, in *Ars vitriaria experimentalis* the brush is the preferred tool for the glass painter. Depicted in figure 8 is Kunckel's description of a glass painter's brush, which translates to the following:

*"The brush that one needs for clothing must be made of fine hair. When painting nudes, your brush needs to be made out of goats hair or ram's bristles. The Schlicht-und-Dupplier-Penselschen and the wider gilding brush need to be made out of female fox hair, and these should be folded in the feathers of a goose."*¹⁴

Several types of brushes are recommended for painting on glass: An unspecified fine haired brush for painting clothing and a brush made out of goat's hair for painting nudes.

What is interesting is Kunckel's mention of a so-called *Schlicht-und Dupplier-Penselschen*. This *Penselschen* (little brush) has no English translation. However, the Germans have a term called *Verschlichten*¹⁵, which is the finishing step in (modern) manual paint application that evens out the paint surface and removes disturbing brushstrokes and air bubbles. A *Schlichtpinsel* is designed especially for that purpose.

¹³ Johannis Kunckelii, *Ars Vitriaria Experimentalis* (Leipzig: Christoph Günthern, 1679), 434.

¹⁴ ***Beschreibung der Pensel zum Glas-mahlen.***

Die Penseln/ welche man zum Gewanden brauchet/ müssen von weichen Porsten seyn; wenn man nackendes will mahlen/ so müssen sie die Pensel von Ziegenhaaren oder Bocksbarthen seyn; die Schlicht- und Dupplier-Penselchen aber sollen von fahen Haaren seyn/ wie gleichfalls auch die breiten Goldpensel/ und müssen fein in Gans-Federn eingefasset werden.

To my knowledge, no English translation of *Ars vitriaria experimentalis* is available. Therefore, all English translations given in this annotation are my own.

¹⁵ https://www.youtube.com/watch?v=yqm_ZpugxG4 This is a German instruction video from Boote TV, about the manual painting of Yachts. In this video the German words *Verschlichten* and *Schlichtpinsel* are explained



Figure 9: *Schlichtpinsel*¹⁶

Above depicted is a type of modern *Schlichtpinsel*, that is used in applying yacht varnish. This particular type actually has some similarities with the conservator's sponge that was used in the experiment 2 section. However, brushes made out of hair are being used for *Verschlichten* (evening out of paint layers).

Unfortunately, it was at this moment not possible to experiment with the *Schlicht-und-Dupplier-Penselschen* that is described by Kunckel. This means that, for sake of completeness, future research on this topic should focus on the different types brushes that are described by Kunckel. Furthermore, the German word *Dupplier* (or any spelling variety) unfortunately has a great amount of very different meanings (ranging from a 15th century German long sword fighting technique, to the application of a reinforcing canvas backing). This term *Dupplier* also requires further research.

As is the case in Cennini's treatise on glass painting, Kunckel does not distinguish between fired and unfired application of paint.¹⁷ There is however one very interesting experiment that is especially meant for unfired decoration: '*Ein Sonderliches curieuses Trinckglas zu machen*¹⁸ or 'How to make a particularly curious drinking vessel.'

In the development of this technique, Kunckel was probably inspired by the small, early Christian, medallions made of two glass discs – a transparent front and a coloured at the back – with a gilded portrait in between. These objects, such as the one shown in figure 10, were excavated *en masse* from the Roman catacombs in the 17th century.¹⁹

¹⁶ Yachtshop24.com (web 24-3-'16) <http://www.yachtshop24.com/Schaumpinsel-Yachticon>

¹⁷ Kunckelii, *Ars Vittraria Experimentalis*, 443.

¹⁸ Kunckelii, *Ars Vittraria Experimentalis*, 441.

¹⁹ Howells, "Late antique gold glass in the Britisch museum", 96.



Figure 10: Ficoroni Medallion.²⁰



²⁰ Ficoroni Medallion, Metropolitan museum early 4th century.

Figure 11: *Doppelwandgläser mit Lackmarmorierung und Blattgold*²¹

In short²², Kunckel instructs to take two clear glass cups sized so that the smaller glass fits perfectly inside the bigger glass. Then, a paint layer is applied on the inside of the bigger glass. Kunckel advises in his recipe to apply an *Edelgestein- Art* (a painted imitation of marble) using oil paint. This is allowed to dry for just a while, whereafter any design of choice can be scratched out of this paint layer. The next step is to then gild this so that seen from the outside, a gold *sgraffito*-design appears. The outside of the smaller cup is then gilded and the two cups are permanently adhered together using a clear resin. The result can be seen in figure 11: A brightly coloured stone imitation cup with a gilded design on the outside with a fully gilded inside.²³ Both inside and outside having the unique properties of reverse glass painting that were discussed in the introduction.

The application of another glass plate behind a reverse glass painted object can form a solution to the problems that were encountered in the first two experiment sections. A firmly applied glass backing presses out any irregularities in the colour and morphology of the thin paint layer, while at the same time immediately protecting the paint and gilding.

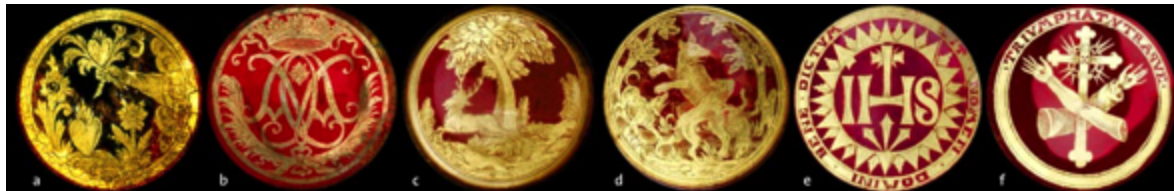


Figure 12: Not only cups, but also small medallions like these where made using Kunkel's revived *Zwischengoldglas*-technique.²⁴

Experiment 3: *Zwischengoldglas*

The reconstruction shown below was devised based on Kunckel's recipe to observe the behaviour of oil paint trapped between two glass sheets.

It must be kept in mind however that Kunckel wrote his treatise in the 17th century so that it postdates BnF Ms. Fr. 640. While the *Zwischengoldglas*-technique usually is attributed to Kunckel, more research is needed to determine if the autor of BnF Ms. Fr. 640 and his 16th century contemporaries could have experimented with this technique.

²¹ Walter Spiegl, *Doppelwandgläser mit Lackmarmorierung und radiertem Blattgold* (web: http://www.glas-forschung.info/pageone/pdf/zwigo_2.pdf, last accessed 24-3-2016), 5

²² Original manuscript and transcription are included in appendix 1.

²³ Spiegl, *Doppelwandgläser*, 2.

²⁴ Spiegl, *Doppelwandgläser*, 7.



Figure 13: Black outline on glass



Figure 14 Quick and thin application of paint on whole surface using a brush

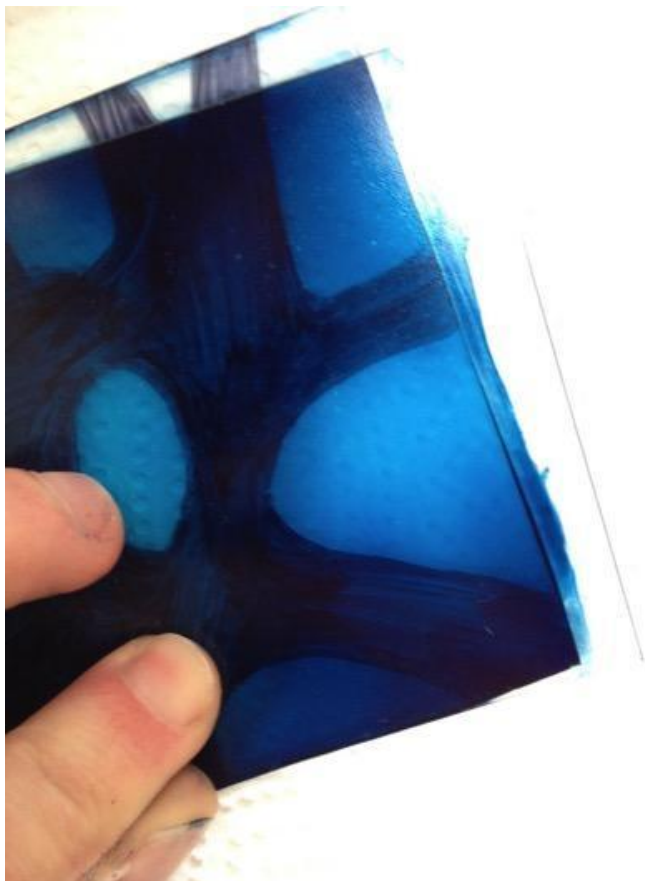


Figure 15: When held up against the light a translucent homogeneous coloured film can be observed



Figure 16: A reflective metal foil lights up the end result

It can be observed that using the *Zwischengoldglas*-technique, the irregular paint layer on figure 14 becomes completely regular in colour and morphology after a second glass plate is pressed to the back. No difference between painted glass and real (fired) coloured glass can be seen in figure 15. The end result is a sparkling sapphire tinted background that bears a close resemblance to precious jewelry.

In a way, manuscripts like BnF Ms. Fr. 640 that collect, complement and distribute practical knowledge can be viewed as a form of production innovation. This concept of innovation has been the main idea behind this annotation. And in that respect, we can now look at reverse glass painting in a different way. The use of a glass plate to paint on gives certain properties – magnification and saturation of colours – to an object.

There is however another important feature to it and that is the speed at which these artworks could be produced and sold. Apart from the obvious advantage that one can easily trace an existing design on a transparent glass plate, a reverse glass painting does not need to dry and can be displayed and sold directly after finishing. The glass front is maintenance free and might even be better suited for damp environments than canvas or panel paintings.

Especially with *Zwischengoldglas* a good result is achieved in a short time (no time is lost with careful *peu à peu* paint application), with less material and a minimal degree of practical skill. It could therefore be perfectly suitable for ‘mass produced’ paintings, the new phenomenon that emerged in the 16th and 17th century.²⁵

Conclusions and follow up research

In BnF Ms. Fr. 640's fragment on reverse glass painting, emphasis is laid on producing a uniform monochrome translucent background. The idea behind this is most likely to imitate precious stones or colored glass.

This annotation focussed on the application of these monochrome backgrounds. Application with a brush '*peu à peu*', the way the author describes, proved problematic and resulted in an uneven paint layer.

Due to the brevity of the text and author's use of the third person when commenting on glass painting, I concluded that the author probably was no actual practitioner of this particular art. So to continue, some additional paint application methods were devised and performed with promising results. However, the large amounts of paint these techniques required made it very unlikely that any of these methods could actually have been used. More importantly, in the consulted art technological sources no other tools for glass painting are mentioned but the brush. The *Zwischengoldglas-technique* – wherein an extra glass plate is pressed at the painted backside, smoothening the paint layer – that was reinvented by Johannes Kunckel in the 17th century, proved to be an interesting and useful solution to the encountered problems. This technique, in which a

²⁵ For further reading on the low-end art market of the Low Countries in the 16th and 17th century:

Hans Vlieghe, "*The fine and decorative arts in Antwerp's golden age*", in *Urban achievement in early modern Europe*, ed., Patrick O'Brian (New York: Cambridge university press, 2008), 173-185.

and Marten Jan Bok, "*The rise of Amsterdam as a cultural centre: the market for paintings, 1580-1680*", in *Urban achievement in early modern Europe*, ed., Patrick O'Brian (New York: Cambridge university press, 2008), 186-209.

painting is hermetically sealed and instantly ready-to-use, opens new doors in assessing a reverse glass painting. Not only on an aesthetic or technical level, but socio-economical as well.

This annotation has been made without access to 16th century reverse glass paintings. Extensive hands-on research on actual 16th century reverse glass icons, created in the days of BnF Ms. Fr. 640, is necessary to determine if a similar technique could have been used then. Furthermore, as said in the previous chapter, the role of the *Schlicht-und Dupplier-Penselschen* that is mentioned in *Ars Vittraria Experimentalis* should be subject to proper investigation. Lastly, it would be very interesting to see if other backing materials such as wood or metal could be used to seal and smoothen gilded and painted glass.

Bibliography

BnF Ms. Fr. 640. Transcribed by the 'Making and Knowing Project'. Colombia University, winter 2016.

Bok, Marten Jan. "The rise of Amsterdam as a cultural centre: the market for paintings, 1580-1680", in *Urban achievement in early modern Europe*, edited by Patrick O'Brian, 186-209. New York: Cambridge university press, 2008.

Houbraken, Arnold. *De groote schouburgh der Nederlantsche konstschilders en schilderessen*. 's-Gravenhage: J. Swart, C. Boucquet and M. Gaillard, 1753.

Howells, Daniel Thomas. "Late antique gold glass in the British museum". DPhil thesis, University of Sussex, 2010.

Kunckelii, Johannis. *Ars Vittraria Experimentalis*. Leipzig: Christoph Günthern, 1679.

Van Mander, Karel. *Het schilder-boeck*. Utrecht: Davaco Publishers, 1969, facsimile van de eerste uitgave, Haarlem 1604.

Ryser, Frieder. *Verzauberte Bilder*. München: Klinkhardt & Biermann 1991.

Spiegl, Walter. *Doppelwandgläser mit Lackmarmorierung und radiertem Blattgold* (web: <http://www.glas-forschung.info>)

Thompson, Daniel V. trans., *Cennino D' Andrea Cennini's Il Libro dell' Arte*. New York: Dover publications, 1960.

Vlieghe, Hans. "The fine and decorative arts in Antwerp's golden age", in *Urban achievement in early modern Europe*, edited by Patrick O'Brian, 173-185. New York: Cambridge university press, 2008.

Weyerman, Jacob Campo. *De levens-beschryvingen der Nederlandsche konst-schilders en konst-schilderessen*. 's-Gravenhage: de wed. E. Boucquet, H. Scheurleer, F. Boucquet and J. de Jongh, 1729.

XXVII.

Ein sonderliches curieuses Trinctglas zu machen.

Nimm zwey glatte Gläser/ welche sich gerade in einander fügen/ welche auch / sonderlich was die Höhe betrifft / also beschaffen seyn / daß das innere Glas/ dem eusern ja nicht an der Höhe vorgehe / sondern beyde gleich hoch seyn; mahle das grössere inwendig mit Oehlfarben nach Edelgestein- Art auff's beste als du kanst; laß es trocken werden / alsdenn reiße mit einer spizigen Gradiernadel hin und wieder / Aederlein oder was du wilt darein. Ferner schwäncke altes Leinöhl darinn herum/ lasse es wieder wohl heraus lauffen und umbgestürzt fast trocken werden; wann es demnach ein wenig flebrigt ist/ so lege Blättlein von Gold oder Metall hinein / drücke sie mit einer Baumwollen inwendig an / und laß es folgend's wohl austrucknen / so scheinen die gerissenen Aederlein goldreich heraus. Indessen nim das andere oder kleinere Glas/ streiche es auch vermittelst eines Pensels mit alten klaren Leinöhl oder einen reinen Firniß auff's dünste an / und belege es über und über mit geschlagenen Gold oder Metall/ so sihet es von inwendig einen verguldeten Becherlein gleich/ lasse es auch trocken werden und setze sie in einander (es müssen auch die Gläser also eingerichtet seyn / daß sie in der Mitten/ wann sie in einander gesetzt / keinen oder wenig Raum haben / damit sie nicht gar zu dick scheinen.) Ferner pulverisire reine Kreiden/ mache solche mit rechten Lacc-Firniß zu einen Teig/ verkürte damit oben den Rand der zwey Gläser fein glatt/ auff daß mans nicht erkennen kan/ daß es 2. Gläser seyn/ welches sich den gar wohl thun lästet; lasse es trocken werden/wann wol trocken/ überstreichs wieder mit einen Penslein mit lautern Lacc-Firniß/ laß wieder trocknen/ poliers hernach mit Pimsstein; streichs wieder mit lautern Firniß an / und wanns schier trocken/ so lege geschwind Blättlein von Gold darauß/ alsdenn noch einmahl oder 3. mit Lacc-Firniß angestrichen / so kan das Gold nimmermehr abgehen.

Wann man an statt der Farben und Mahlwercks nur alt Lein-Oehl in das grössere Glas gießet / solches wieder ausleeret und austropffen lästet/ hernach des Hautschen Streugantz darein streuet / von allerley Colouren / und dennoch das inwendige Glas verguldet/ so kommet es noch schöner.

Transcription of Johannis Kunckelii, *Ars Vitrarya Experimentalis*, 441.

Ein sonderliches curieuses Trinckglas zu machen.

Nimm zwey glatte Gläser/ welche sich gerade in einander fügen/
welche auch/ sonderlich was die Höhe betrifft/ also beschaffen seyn/ daß
das innere Glas/ dem eußern ja nicht an der Höhe vorgehe/ sondern bey-
de gleich hoch seyn; mahle das größere inwendig mit Oehlfarben nach
Edelgestein-Art aufs beste als du kanst; laß es trocken werden/ alsdenn
reiffe mit einer spitzigen Gradiernadel hin und wieder/ Aederlein oder
was du wilt darein. Ferner schwancke altes Leinohl darinn herumb/
lasse es wieder wohl heraus lauffen und umbgesturtzt fast trocken werden;
wann es demnach ein wenig klebrigt ist/ so lege Blättlein von Gold oder
Metall hinein/ drücke sie mit einer Baumwollen inwendig an/ und laß
es folgendes wohl austrucken/ so scheinen die gerissenen Aederlein gold-
reich heraus. Indessen nimm das andere oder kleinere Glas/ streiche
es auch vermittelst eines Pensels mit alten klaren Leinohl oder einen rei-
nen Furniß aufs dünste an/ und belege es über und über mit geschlage-
nen Gold oder Metall/ so sihet es von inwendig einen verguldeten
Becherlein gleich/ lasse es auch trocken werden und setze sie in einander
(es müssen auch die Gläser also eingerichtet seyn/ daß sie in der Mitten/
wann sie in einander gesetzt/ keinen oder wenig Raum haben/ damit sie
nicht gar zu dick scheinen.) Ferner pulverisire reine Kreiden/ mache solche
mit rechten Lacc-Furniß zu einen Teig/ verkutte damit oben den Rand
der zwey Gläser fein glatt/ auff daß mans nicht erkennen kan/ daß es 2.
Gläser seyn/ welches sich deñ gar wohl thun lasset; lasse es trocken wer-
den/ wans wol trocken/ überstreichs wieder mit einen Penselein mit lau-
tern Lacc-Furniß/ laß wieder trocknen/ poliers hernach mit Pims-stein;
streichs wieder mit lautern Furniß an/ und wanns schier trocken/ so lege
geschwind Blättlein von Gold darauff/ alsdenn noch einmahl oder 3.
mit Lacc-Furniß angestrichen/ so kan das Gold nimmermehr abgehen.
Wann man an statt der Farben und Mahlwercks nur alt Lein-
Oehl in das größere Glas gießet/ solches wieder ausleeret und aus-
tropffen lasset/ hernach des Hautschen Streuglantz darein streuet/ von
allerley Coleuren/ und dennoch das inwendige Glas verguldet/ so kom-
met es noch schöner.