

Reading technical sources

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ABSTRACT The study of documentary technical evidence is intimately interlinked with the making of reconstructions. Generally we assume a significant connection between, say, a 17th-century source and a 17th-century painting, but rarely is it much closer than that, and it is extremely rare to find a source that describes a specific painter's techniques. An example of such an ideal source is found in the 17th-century manuscript *Recepten-boek om allerlei kleuren te verwen* (Frans Hals Museum, Haarlem, MS 93-94) probably written between 1650 and 1680, which contains particular recipes for making pigments for specific painters' studios. Another particular 'recipe' is found in a letter to Gerard ter Borch from his father. The translation of technical sources can be extremely difficult; extreme care and much contextual and background information must be brought to bear on any attempted translation, or a wholly misleading result will be obtained. Such a translation process is demonstrated using the example of the ter Borch letter.

Introduction

What are technical sources? The answer seems simple and straightforward. We think of recipe books, treatises and manuals on artists' materials, tools and methods. We rightly consider these bits of information as of fundamental importance to our understanding of how art objects were made. It is on the basis of such contemporary descriptions that we try to make valid reconstructions of paints and procedures. Guided by the sources, we try to relive the act of painting. This kind of basic knowledge helps in the interpretation of the artist's original intent.

In research, the study of documentary technical evidence is invariably interlinked with the making of reconstructions. These exercises are mutually rewarding: the reconstructions help us to understand the intricacies of often confusing texts; the texts help in the interpretation of unexpected phenomena we observe in our reconstructions.

Generally, the results of these comparisons are valued by deductive reasoning: 17th-century treatises tell us that lead white should be used in this or that manner; so if the phenomena we observe in our reconstruction match those that we observe on 17th-century paintings, we assume a significant connection between our 17th-century source and our 17th-century painting. Not often does it get much closer than that. Rarely do we find a source that says: 'This painter made on that particular date that specific paint and this is how he made it.' Only occasionally does a text turn up that approaches this ideal. A good example may be found in a relatively unknown, 17th-century, unpublished manuscript, the *Recepten-boek om allerlei kleuren te verwen* (Frans Hals Museum, Haarlem, MS 93-94), probably written between 1650 and 1680, containing mostly recipes for the craft of textile dyeing.¹ However, some of the recipes describe the making of pigments for the painter's studio.

For instance, the manuscript gives a description, precisely dated 6 January 1666, for the preparation of a yellow lake pigment.

geele lacca compose 6. Janni 1666, Neemt geele bessen stootse even aan stukken, een vierendeel van een pont, zetze kout te week in loog van potasch. Nemmt potasch een loot een pint regenwater, tzout gesmolten zijnde, giet het soetjes aff door een dichte doek 2 a 3 maal. De bessen dus kout geweekt zijnde en door geparst, maakt de loog met het subtylste der bessen doortrokken laauw: En giet daar l'Aluyn water (mede maar laauw of bloetwarm zijnde) bij. Neemt een once aluyn stoot het fijn en gieter op twee pinten kout of bloedwarm regenwater, d'aluijn gesmolten zijnde en blijvende giet het water van d'aluijn door een dichte doek Dit t'zamen onder malkanderen geschuijmt hebbende giet het sachtjes door een dichte doeck, en weer door tot datter niet van de lacca door de doek vloeijt, droog zijnde berejt het op de steen, en droogt de lacca op papier. Deze lacca seyde Th. Wijk dat seer jaa soo schoon als hij see ooit gesien hadde was. (MS 93-94, fol. 129)

Take a quarter of a pound of yellow berries; crush them to pieces. Let them soak in cold potash lye. [Take one 'loot' of potash to one pint of rain water. When the salt is melted, pour it two or three times softly through a dense cloth.] Having soaked and squeezed the berries, you make the extract of the lye with the subtlety of the berries lukewarm. And then add to it 1' of alum water that is also lukewarm or tepid. [Take one ounce of alum, grind it and pour it on two pints of cold or lukewarm rainwater. The alum having dissolved and staying, pour the alum water through a fine dense cloth.] When these two liquids are mixed a foam is formed; then pour it through a dense cloth. And repeat this until no more of the lake flows through the cloth. Dry the lake on a piece of paper and when it is dry you can prepare it on the stone. Of this lake Th. Wijk said that it was the finest lake he had ever seen.

(Translation by the author)

Some recipes in the manuscript may be associated with the name of a well known painter.

Hans Boulengier heeft geleert van een schilder uit den Haag dat auripigment met serke wijnrek te week gezet, en daar na stilletjes aggegoten, en verse eek daar op gedaan, en weer afgegoten, en soo tot driemaal toe, en dan met water afgewassen, niet sich selve meer en zal op eeten als daar meede geschildert is; maar dat de mensen op dese ny se sijn in etendheyt niet en vergeet.

(MS 93-94, fol. 11)

Hans Boulengier has learned from a painter in The Hague that orpiment soaked in strong vinegar of wine and then quietly decanted, and then fresh vinegar poured on it again and decanted again, and this up to three times, and then rinsed with water; will no longer eat itself when painted with it. But people should not forget about the corrosiveness of the pigment.

(Translation by the author)

Even more spectacular is a recipe given by a famous old master. Under the heading 'Red lake from Cochineal after Gerard Terborgh from Swol' the recipe prescribes:

Root Lac van Cochenele van Geerart ter Burg van Swol. Een kan regewater, potas 1; zied dit t'zamen en schymt het af, giet dan de loge over sachtjens in een andere nieuwe pot, doet dan daar in soo veel karmosijn vlokken, dat men mooytjes t'samen opzieden kan, en kookt het t'samen, en gesoden zynde, laat het soo een nacht staan weiken: en s'anderen daags kookt het weder tot dat de vlokken wit worden: heet zynde doet de vlokken styf door eenen schoonen doek wringen, maar ziet wel toe dat de doek niet en breekt anders zoude de Lac harig zyn: de pot schoon vvtgewassen, doet het zop heet zynde daar weder in, en laat het staan laauw worden. Dan allwyn water dat bloetlauw is en giet het by het ander soo zal de lac al bruysende opkomen, en schymt de Lac boven af soo lang daar scauym ofte bruiys opkomt, het welke gy in een nieuwe voorst pan zult doen die aan beyde de zyden met potaard bedekt is, die gy dan daar naa aan de einden doorboren zult, en laat het water daar wtlopen, en neemt dan het water dat in de pot nog is, giet dat door een schone doek, en laat het water stil wtlopen, en doet de lac mede in een nieuwe pan en setze te drogen. De lac die bruysende opgekomen is is de beste.

(MS 93-94, fol 109)

A little rainwater, potash 1 ounce, boil this together and skim, pour the lye gently in another new jar, put in it so many carmine flocks that one can boil it well together, boil it together and, after boiling, leave it to soak one night: and boil it again the next day until the flocks become white: still hot, wring the flocks firmly through a clean linen, but take care that the linen does not break, otherwise the lake will become hairy: after the jar has been rinsed clean, put the broth still hot in it again, and leave it to cool. Then pour the tepid alum water into the broth. The lake will thus foam on the top, and skim the lake off as long as the foam or froth keeps coming up. Then you will put in a new ridge-tile which is covered with china-clay on both sides, which you will drill through afterwards at both ends. And let the water run out and then take the water which is still in the jar, pour it through a linen, and let the water gently pour off. And put the lake in a new roof-tile and put it to dry. The lake which came up foaming is the best.

(Translation by the author)

It is a rare occurrence to find such a precise recipe for the making of lake pigments by a 17th-century painter (Hofenk de Graaff 1996b). It is even more exceptional that the name of the painter is given with the recipe and that it is one of the very few descriptions, from north of the Alps, of lake pigment production as part of a recycling process. Recipes to extract colorants from clippings and shearings of grain-dyed textiles to make lake pigments are much more common in Italy (Wallert 1991). Could ter Borch have learned of this procedure during his trip to Italy? Interestingly the very same red pigment lake is described in Beurs's treatise (1692) as a 'Haarlem lake'.² This source, the Haarlem Manuscript, provokes questions about centres of knowledge, about transmission of technology and about the role that painters may have played in this process. The significance for science and scholarship of the manuscript as a technical source is clear.

Ter Borch provides us also with a less clear-cut, but possibly very significant piece of evidence. During his stay in London in 1635, he received from his father on 3 July a trunk packed with personal necessities and art supplies, including a manikin. Along with the supplies came a letter about the contents of the trunk and the advice to make many drawings after the manikin. The advice ends with a very intriguing, but confusing bit of artistic advice:

...doch teijckent veel: groote en woelende ordonantien, gelick de ghij met genomen hebbet, daer P. Molyn u plegt om te beminnen, en als ghij schilderen wilt: dan schildert ock wat ordonantsij van modarn bij u rommelerij ten eersten op gelick ghij well koent: want dat spoet besst; en blijft ock schoonst en vloeyent int besterven also doende sult ghij well bemint warden met Godt: gelijck ghij ock tot Haerlem en tot Amsterdam waert.

This sentence is as hard to interpret in modern Dutch as it is hard to translate into English. If we do make an attempt, we come to realise once more that every translation is an interpretation. Kettering, who has worked extensively on ter Borch, devoted an important essay on this sentence for the exhibition catalogue of his paintings (Kettering 2004). Close reading and extensive consultation with scholars and experts in historic Dutch language resulted in a convincing translation:

... but draw a lot: large, dynamic compositions, like those you have taken with you, which P. Molyn pledged you to cherish. And if you wish to paint, work up some modern compositions, as you surely can, putting in your stuff right from the start, because that goes most quickly and stays most beautiful and flowing while drying. If you do that you will be loved by God; as you were in Haarlem and Amsterdam.³

The key word in this translation is 'modern', referring to new, modern subjects as depicted in the works of artists in Haarlem and Amsterdam, who specialized in scenes of 'merry companies' – a specific genre. This new approach would be found in interiors by Buytewech, Esaias van de Velde, and Dirck Hals in Haarlem and Pieter Codde and Willem Duyster in Amsterdam. Like the history works from which they derived, the Haarlem merry companies displayed tremendous variety in

activities and props. In this translation the advice is primarily taken to concern subject matter: ter Borch should continue producing compositions from everyday life as he had learned to do from those painters in Haarlem and Amsterdam. The term 'modern' would be useful shorthand for describing a new type of painting: *genre*, emphasizing visible forms and everyday reality rather than idealized constructions (Biesboer 1993). Ter Borch's paintings featuring women dressed in satin would fit the description for 'modern compositions'.

This interpretation was also followed by Montias (2003) in his study of 17th-century inventories. He also found these modern subjects in the 'low-*genre*' works of Codde, Buytewech, Duyster and Duck: *corps-de-garde* pieces, peasant companies. The first finding of the word 'modern' was in a 1627 sale of '*moderne tronien*'. Then there is a '*kamertje van Codde, modern*': 'a room by Codde, modern'. And a '*modern konterfeitsel*': 'a modern portrait'. It seems from such descriptions that a painting labelled as 'modern' could vary from the elegant moody reading ladies by ter Borch to the rowdy looting soldiers by Jacob Duck, from interior pieces to *tronien* (tronies), from merry companies to portraits.

To find an alternative translation, it may be useful to refer to an earlier study by Montias (1987) on cost and value in 17th-century Dutch art. In this study, innovations in painting were discussed as a response to purely economic supply and demand pressures. These responses could be product innovation or process innovation. Making the choice for specialization in particular subjects, portraits, landscapes or still-lives would allow a painter to carve out a specific niche for himself and meet the demand for 'modern' paintings. The merry company scenes of Codde, Duck and Duyster could be taken as examples of such a product innovation.

However, 'art historians are chiefly concerned with product innovation and, by and large, ignore process innovations' (Montias 1987: 456). In this context, therefore, it seems sensible to look at possible process innovations too.

It has been amply demonstrated that process innovation in the form of standardized patterns, using templates or pounced transfer sheets, could cut down on the time, and therefore on the cost, of production (Wallert and Tauber 2004). Labour, being the prime determinant in the cost of art, could be spread over more people. Division of labour is a classic way of increasing productivity and reducing costs.

The most important cost-cutting process innovation, however, may be found in moving from time-consuming colourful additive compositions towards more simplified tonal compositions. This had the effect of reducing the time required to produce a picture and, given the fact that time was the main component of cost, of reducing the cost and hence the prices of such works. These cost-cutting techniques had already been introduced as early as the mid-16th century.

An entry in the 's-Hertogenbosch guild charter of 1546 states that:

7. Item sullen alle schilders verbonden wesen te wercken goede verwen, ende sullen sy egheen schilderye van taverelen moegen wercken dan op goed droege eyckenboert oft wageschot, zijnde elcke verwe ierst gedootverwet ende alsoe op eenen dobbelen grondt, sonder dat sy haer principael olyeverwen opten lynre ofte principael sullen moegen ten iersten opmaecken mer tselve werck gehouden wesen getrouwelicken te maecken tot heur meesters pryse, ende dat opte peen van drye Carolusgulden, te deylen als boven. (Bezemer 1894: 24)

All painters should be obliged to work with good paints, and shall make no paintings on panel unless on oak planks or wainscot, each colour first being dead-coloured and thus on a double ground. They may not work up their principal oil paints on canvas immediately in one go.

(Translation by the author)

This prohibition against the use of panels that were not first 'dead-coloured' (*gedootverfd*) suggests that the bypassing of the dead-colouring stage in the preparation of panels – the direct working-up of the painting – was already a device painters were using to cut costs at the expense of quality. By making these shortcuts, artists were able to polish off a picture much more quickly.

Dead-colouring – in standard 17th-century painting practice – is the first execution in paint of the image that was drawn on the canvas. Over the grey ground layer on the canvas, individual forms were painted-out in even, level fields of colour. In doing this the base colour was fixed in a flat mid-tone with a relatively cheap material. For instance, a blue area could first be blocked-out with the cheap pigment smalt, creating a blue base tone. The area could then be worked up with a translucent glaze of red lake to give a deep dark tone to the shadow parts. It could then be closed off with a very thin layer of the beautiful, but extremely expensive, ultramarine.⁴ Red draperies also could first be blocked out in a dead-colour. The 17th-century physician de Mayerne described:

Il fault premierement peindre les couleurs mortes, cest a dire mettre la premiere couche avec Cynabre & Lacque, apres laisser seicher, puis fault glacer de belle lacque, & la dessus enforcer de lacque, & au plus fort de noir d'ivoire préparés avec verdegris & couperose comme dessus, & rehausser de Cynabre, & d'un peu de tresbelle mine ou de Cynabre avec tant soit peu de blanc de plomb. (van de Graaf 1958: 151)

First, the dead-colours should be painted, that is, a first layer of vermilion and red lake. Next, let it dry. Then it should be glazed with a good red lake. Here and there, this is touched-up a bit stronger with the lake; and stronger still with ivory black – which to promote drying has been mixed with a touch of copper green. Then, the highlights of the drapery are painted with an orangey mixture of vermilion and very good red lead, or a pale red mixture of vermilion and lead white.

(Translation by the author)

The obvious disadvantage of this approach is that each layer must dry before the next is applied so the method is very time-consuming. The 'modern' method that the 's-Hertogenbosch charter tried to combat would bypass this dead-colouring stage and directly work up the painting in tonal values from a sketchy underdrawing. The charter forbids this cheap *ten eersten opmaecken*, which would imply finishing off the painting in a single layer directly over a more or less accurate drawing.

Not only did the productivity in numbers of pictures per month rise, but also the economic effect was further increased because the new approach aimed at a reduction in the unit cost. The materials used for a 'modern' painting were cheaper. Even though the colours used in the traditional dead-colouring stage were not the most expensive (cheap smalt under expensive ultramarine and cheap mixtures of lead white and vermilion under expensive cochineal red lakes), the expenses for just some earth pigments would be even less.

With these considerations in mind, and returning to ter Borch's letter above, the key word in the alternative translation would be the word *ock*. This word implies that there is an alternative: if you paint in this way, you should *also* paint in another way – the modern way. The advantage of the modern way over the non-modern is apparently of a technical nature. The expression *dan schildert ten eersten op* refers to the practice that the 's-Hertogenbosch charter so adamantly condemned and can be translated as *then work them up right from the start*. This apparently is the best way to speed up the process (*dat spoet best*) and at the same time the result – the paint – stays most beautiful and flowing while drying (*blijft ock schoonst en vloeijent int besterven*).

This would all be accomplished by *ten eersten op schilderen*. *Opschilderen* or *opmaken* would, in traditional painting, be the step in the process that logically follows when the dead-colouring is completed. It could be translated as *working up* and comes close to applying the final touches. Doing this working-up 'in one go', or 'right from the start', would imply the omission of proper dead-colouring:

... but draw often: large and busy compositions, like the ones you have take with you, for which P. Molyn loves you so much. And if you want to paint: then you should *also* paint compositions in the modern way by rummaging about and working them up right from the start, as you are well able to do, because that is the quickest way and [the paint] stays most beautiful and flowing while drying. In doing that you will be loved by God, as you were in Haarlem and Amsterdam.

This other approach is one in which shapes and forms were defined in monochrome brushwork. This was often very loosely done in sketchy touches, then gradually more colour was brought into the work, but in a much less compartmentalized manner. This would imply a very efficient painting technique that allowed a rapid completion over a swift undermodelling in thin and rapid drying browns and greys.⁵ This method did not enjoy a particularly high status, hence the expressions 'rummaging' in the ter Borch letter and 'smudging' in the remark by de Lairese not to paint 'like Rembrandt or Lievens so that the juice would run down the piece like shit; but (contrary) smooth and mellow, so that the objects seem round

and in relief only through artifice and not through smudging'. Apparently the approach was something of an innovation, as de Lairese wrote that: 'there are some clever characters who try to get some recognition by novelties. Recently several of the types were seen; to mention only two, Rembrandt and Lievens'. Hexham's 17th-century Dutch-English dictionary (Hexham 1678) suggests that the word *rommelerij* could have had this particular meaning for ter Borch. Its definition for *rommelaer* is 'one who pushes to and fro' – which is very close to 'rummaging about'. It should be noted in this context that only painters with very special abilities could be expected to deliver appreciable results with this direct method. According to de Lairese:

... op zyn Rembrands of Lievensz., dat het sap gelyk drek langs het stuk neer loope; maar (contrary) gelyk en mals, dat uwe voorwerpen alleen door de konst rond en verheeven schijnen en niet door kladdery.

...dat men zulke schrandere geesten vind die door nieuwigheden eenig aanzien ... zoeken te verkrijgen. Men heeft 'er verscheidene van dien aart sedert eenigen tyd gezien: doch ik zal 'er maar alleenlyk twee noemen, als Rembrand en Jan Lievensz.

...voor die een vaste hand en vlug penceel heeft, om zyn Concept met den eersten te voltooiën; 't welk anders, zonder het eerst te doodverwen niet kan geschiede.

(de Lairese 1707: 24)

... like Rembrandt or Lievens so that the juice would run down the piece like shit; but (contrary) smooth and mellow, so that the objects seem round and in relief only through artifice and not through smudging'

... there are some clever characters who try to get some recognition by novelties. Recently several of the types were seen; to mention only two, Rembrandt and Lievens.

[it took] someone with a steady hand and a quick brush, to complete his concept in one go; which otherwise could not be done without dead-colouring it first.

(Translation by the author)

Important technical sources may be hidden in the guise of ephemeral or casual remarks. The letter to ter Borch may be taken as a complementary reference, both to product innovations in terms of subject matter as well as to process innovations in terms of efficient working methods.

These few words, casually hidden among remarks on trivial matters, appear to be a surprisingly rich source of information on historical painting techniques.

Notes

1. Frans Hals Museum, Haarlem, MS 93-94. The manuscript was given to the city of Haarlem in 1888 from the inventory of the dye-works of Jan de Kreuk (dissolved in 1875) (Hofenk de Graaff 1996a).
2. Ter Borch must have learned most of the tricks of his trade during his apprenticeship with Molijn in Haarlem. In Haarlem, Dirk Hals and Jan Miense Molenaar (and Pieter Codde and Willem Duyster in Amsterdam) specialized in 'merry company' scenes. The influence, especially for their compositional schemes, of Codde and Duyster in the early 1630s on the formation of the young ter Borch has already been noted (Gudlaugsson 1960).

3. A full facsimile of the letter, together with a transcript and a translation of the text in English is given in Kettering (2004: 188–9), which is, with some revisions, based on the earlier one given by Kettering (1988: II, 864–5).
4. '*Beau labeur en bleu. Faites avec esmail & blanc de plomb (duquel tant plus y a, tant plus la couleur s'estend facilement) couchés le tout avec ces couleurs. Enfoncés avec Laque. Glacés par dessus avec Ultramarin*' (van de Graaf 1958: 149). On dead-colouring also see Wallert (1999: 7–24, especially 21–4).
5. An approach that can also be traced back to the methods practised for the production of the 'merry companies' in Haarlem and Amsterdam (Kolfin 2002: 119–31, 137).

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