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1.

## BEAUTIFUL SETS OF FINELY PAINTED GLASSES FOR THE BURNING MIRROR *or* THE DUTCH DIAFANORAMA

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**THE USE OF GLASS AS AN IMAGE CARRIER** is nothing special for people who are familiar with magic lantern slides. Paintings on glass are also known as 'so-called reverse glass paintings'. This technique was often used for religious representations in the context of folk art. These paintings show two dimensions. The paintings that I want to introduce here are special in that they are not painted on only one pane but on multiple sheets of glass which are arranged at some distance one behind the other. Each glass pane shows parts of the whole image, making each glass pane a supplement that harmoniously fits together with the perspective from the foreground to the horizon. This creates a particularly strong effect of depth or three-dimensionality in connection with the transparency. Fig. 1 shows two of these paintings standing next to each other.

Each painting has approximately the following measurements: length 40cm, height 30cm, depth 9cm (overall dimensions of the wooden frame) and each consists of four painted glass panes. By applying the anaglyph technique, figs. 2 and 3 try to give an approxi-mate idea of the depth effect of the paintings.



3.



These paintings are extremely rare and I previously did not suppose that information about them could be found.

Through a special stroke of luck I came into possession of a copy of the doctoral thesis from 1990 by Mrs Hermina Christiane Kuijper MA (1925–2010) from Hilversum (Netherlands) entitled 'Het diafanorama' (The diafanorama).<sup>1</sup> Almost all of the following information, including the cited sources, is taken from this work.

### HOW WERE THE

### PAINTINGS NAMED?

From the references in newspaper advertisements and catalogues from estate auctions, which are the only available sources from the period of the paintings, it appears that these had apparently no name at that time. They were offered there from the beginning with a description such as 'beautiful sets of finely painted glasses

for the burning mirror', which leads to the conclusion that they were accessories for the burning mirror (concave mirror).

In the 19th century, appreciation for these types of images slowly disappeared. We can only assume that the dependence of the presence of a concave mirror was one of the reasons. More often, the paintings appeared without this companion in estate auctions and then another name had to be found, other than the common 'set of glasses for the burning mirror'. This resulted in various designations at the end of the first half of the 19th century. Sometimes they are described as 'painted perspectives', 'boxes with painted glasses' or 'transparent perspectives'. The name 'diafanorama' appears for the first time in Holland in the *Algemeene kunstwoordentolk*<sup>2</sup> from the year 1847 by Jacob Kramer Jzn. (1802–69). The meaning of the word 'diafanorama' is explained there as 'translucent painting'. Whether this applies to the glass paintings of this article is not certain for there were other 'inventions' in the 19th century that were marketed under the name Diaphanorama. In books related to the art of painting like Swillens we find the description more clearly: 'diafanorama, a translucent painting on two or more panes of glass, a glass-painting'. Whenever I use the term diafanorama in this article, I always mean exclusively the Dutch glass transparencies. I use this term because it aptly describes the properties of these glass paintings, namely transparency and perspective. Moreover, an article about an object that has no name would be complicated and difficult to read. Lastly, I use the original Dutch spelling 'diafanorama' in this article because I want to distinguish these paintings from all other products that are called Diaphanorama.

### WHERE AND WHEN WERE THE PAINTINGS MADE?

The use of the transparency of glass and colour, the addition of an artificial light source and the reflection of the image in a burning mirror are extremely sophisticated in their interaction. Outside of the Netherlands, even better outside of Holland, we find nothing comparable. These paintings are mentioned and partially described in advertisements and auction catalogues from about 1770 and this continues until the 1880s. They were at this time very popular as artistic products and remained so for many years after that.

Guyot, whose book cited below appeared in 1774 in the Dutch translation, mentions in one place a further development of the peep-box to the effect of more than one Figure to be used at a time. The Dutch translator of this book has supplemented the relevant paragraph as follows:

*It has been seen in this country for several years that lovers*

### NOTES

1. My thanks go to Drs Marijn van Hoorn, curator of the Teylers Museum in Haarlem, for her generous help in this matter.
2. A Dutch art dictionary.

of this kind of amusements in such boxes use instead of prints all sorts of perspectives on large square glass panes that are painted with oil colours, with three or four glasses behind the other. On each glass is painted a part of the perspective, and indeed in such a way that the parts fit together and appear to the eye as a perspective. You can buy the same at some Italians. Provided they are well designed and lit, they give a very beautiful spectacle, but they come at a high price.<sup>3</sup>

The Dutch newspapers can be named as the earliest sources reporting on the burning mirror and related glass images. In the *Oprechte Haerlemse Courant* from 6 January 1770, we find the first advertisement, with the following words:

*Hendrik de Winter, broker, will sell at the end of January 1770 in Amsterdam: A beautiful collection of OPTICAL and MATHEMATICAL INSTRUMENTS (...), various types of illuminated optical views, beautiful sets of finely painted glasses for the burning mirror, magic lanterns, (...), as well as precious rarities, etc., of which the catalogue is to be obtained in good time with the said broker.*

Since no detailed explanation is given to the glass paintings, it can be concluded that the paintings were by this time familiar objects and had been in circulation for some time. This advertisement appears again in the issue of Thursday 25 January (1770). Later in the same year, in November, an advertisement appears twice in rapid succession with substantially the same offer in the same paper for a sale to take place in Amsterdam later in the same month. In December of the same year, the broker H. de Winter, together with J. Yver, also a broker, placed an advertisement in the *Amsterdamse Dingsdagse Courant* announcing the sale of paintings by artists of the 17th century, along with mathematical, optical and other instruments, among these 'finely painted glasses for the burning mirror'. This advertisement, in which 'sets of painted glasses for the burning mirror' are always offered, is placed twice a year in the *Oprechte Haerlemse Courant* in 1772 and 1773. In the meantime H. de Winter has found a new solid business partner, Theodorus Otten, again a broker. The advertisement for a sale that should take place on 27 October 1774, is more detailed than the previous ones in terms of diafanoramas. While previously the description of the object was merely 'Fine sets of glasses for the burning mirror', the advertisement now cites as available: 'A particularly large collection of painted glass sets ... including a princely set, showing the destruction of Jerusalem.'

Also, the following sale, dated 7 February 1774, is announced with something special: 'A collection of first-class fine painted glasses, including ... a capital set of eight glasses of the forest scene of the earlier Schouwburg in Amsterdam, where the opera by Radamistus and Senobia is shown, and in the other a seascape with many ships shaken by an emerging storm etc. fine for the burning mirror.'

The first auction catalogue to mention the diafanoramas is dated 18 September 1782. The paintings have no description of the motifs and are offered with a concave mirror, which had a diameter of almost 60cm. This mirror is the largest to be found in the catalogues of estate auctions from 1695 to 1782. There are some known prices that were paid at estate auctions for diafanoramas and/or burning mirrors. In 1796 these varied for 12 diafanoramas between f5.75 and f9.25, which is an average of f7.50 a piece. That was a lot of money compared with the price of f10.25 paid on the same estate auction for a complete magic lantern with 60 motifs. In the year 1800 auction results for 11 diafanoramas between f4 and f14.75 were an average price of f9 a piece. The corresponding concave mirror with a diameter of 45cm fetched f35.50. In the following year, a concave mirror of the same size raised f54.50, but this was on a stand and probably nicer and of higher quality. This mirror came with six diafanoramas that were auctioned off for about f7 each. In 1825 a concave mirror of 54cm diameter in luxury design with storage box was sold for f75. The diafanoramas seem to have reduced in price over time because this time they fetched only an average of f3.40 each. After 1825 considerable lots of diafanoramas continued to be auctioned, but with almost no documentation about prices. In 1828 two pieces cost only f3, and in 1845 only f22.50 was paid

for a lot of 11 diafanoramas, which also was very little. Apparently demand remained very low, because in 1849 prices of only f2.60 and f1.60 were recorded for two diafanoramas. Also, the corresponding burning mirror seemed to enjoy little attention. Although it had a large diameter of 75cm. it fetched only f5.

#### WHAT MATERIALS AND PAINTING TECHNIQUE WERE USED?

The frame in which the panes of glass are kept apart from each other in milled grooves (fig. 4) basically consists of smooth oak boards without any decoration.

The base is fixedly connected to the side parts, usually with a spline. Fig. 4 shows that front and rear of this diafanorama have a special feature in addition: unpainted glass panels that protect the painted panes. The top side is removable and only connected by small metal hooks and loops to the side parts (fig. 5).

The operation of a diafanorama should be thought of as follows. Normally, the artist had a graphic or a drawing in front of him which served as a template and which he mentally divided into several levels. The following watercolour from around 1770 could have served as such a template (fig. 6).<sup>4</sup>



On the first glass pane the foreground has been painted (fig. 7).

The sections that had to remain transparent were left free or received only a single layer of paint. Other image portions, for example the shade, obtained several layers. The painting of the back of this glass was intended to mitigate the translucent light at these locations or to scatter it. I like to mention that on the glass pane in fig. 7 two levels are already created by the fact that the edge of the bank and the bushes were painted on the front and the large tree to the left on the back of this glass.

The second glass pane, which represents the middle level and of course must partially overlap the first layer so that there are no 'empty' sites, is finely painted on the front and contains significant portions of the main subject (fig. 8).

The painted parts were also generally painted from behind with a light grey layer to produce a matte screen effect at these locations. The painting on the back of the glass plate was also again used in the shown paintings to play with the strength of the glass and thus create one more level for the effect of depth (figs. 9 and 10).

The illustrated diafanoramas include a third glass pane to represent the middle level (fig. 11).

The rearmost glass panel (fig. 12), provided that the method of decreasing colour use was applied, is mostly painted in grey colours. A look at the front of the rear glass of the diafanorama of

fig. 3 reveals how finely even the villages visible on the horizon are painted.

Fig. 12 shows the whole glass. The back of the rear glass plate was completely covered with paint and thus produced the indispensable scattering of light (fig. 13).

In landscapes with moonlight, which should be reflected in the water, a method of scratching the paint was applied to make the reflection as effective as possible (fig. 14).

The most distant townscape is only about 28 x 9mm. It is painted on the back of the last glass plate, where a small surface is kept free from colours on the front side, to thereby (as described in conjunction with figs. 7 to 10) get a further level using the thickness of the glass pane (fig. 15).

In a diafanorama with four panes of glass a total of up to eight levels thus including the gaps may be used in order to achieve a perfect three-dimensional effect. A disadvantage was associated with the painting on the front of the first sheet of glass. No layer of varnish could be applied to protect the colour. The varnish would have otherwise affected the main feature of the glass – its invisibility – and the effect of three-dimensionality would have been lost. Therefore it is not surprising that many diafanoramas show severe damage to the paint on the front pane of glass. Chemical analysis of the colours revealed that these were prepared either on the basis of oil or on the basis of protein. In combination with storage in a humid environment, this provides an ideal breeding ground for mould. Herein could lie an additional cause of damage to the pictures over the centuries. The glass panes had to be very thin for good light transmittance, which unfortunately also made them very sensitive to breakage.

## WHAT GENRES WERE THERE?

The following table shows a breakdown of diafanoramas by genre.<sup>5</sup> The number specified in column 2 has been determined by an evaluation of the existing catalogues of contemporary estate auctions. The pieces extant in public and private collections are listed in column 3 (as of about 1990). In the contemporary auction catalogues the descriptions are almost always short. Usually not much more than the name of the main theme, sometimes with a short addition, is mentioned; for example 'a landscape', 'a fire' or 'a fire and a farmhouse' and 'landscape, in the background a calm water'.

	1	2	3
	Genres	No. of diafanoramas in old sources	No. of still existing diafanoramas
1	Landscapes	128	58
2	Village and town views	55	12
3	Gardens	6	3
4	Fires, fireworks and similar	33	12
5	Seascapes	48	9
6	Stages and stage plays	22	12
7	History (mythology and Bible)	17	3
8	Interior Views	5	11
9	<b>TOTAL</b>	<b>314</b>	<b>120</b>

The table leads to the following conclusions: fires and fireworks were indeed particularly suitable for use in combination with artificial light, diafanorama and burning mirror by their distinctive



3. In this connection, the following note on the use of the concave mirror in conjunction with a peepshow is interesting: 'One finds nowadays among enthusiasts much appreciated boxes in which you can look at back-lit prints as good as all the other representations with concave mirror (...) which make a wonderful impression and offer a fascinating view.'

4. Source: Zeeuws Veilinghuis, watercolour, signed Nicolaas Wicart (1748–1815), 't Dorp Dirksland aan de Maas (29.5 x 41 cm).

5. I summed up the genres listed here from the doctoral thesis of Mrs Kuijper in fewer groups.

lighting effects. However, these representations do not offer much more than a tenth of all mentions. What is striking is the relatively large number of representations in which the landscape has either a major role or represents an important element.

### WHO WERE THE BUYERS/USERS?

In order to collect data on this issue, the catalogues of estate auctions were evaluated. Between 1695 and 1850 about 200 names of owners and their profession are listed there, who possessed one or more viewing devices. In this group there are 31 people who possessed both a concave mirror and diafanoramas that can be assigned to the following occupational groups.

Occupation	No. of people
Administrative officer of the Government	11
Judicial officers	3
Army officers	4
Doctors	6
Pastors	3
Professors	3
Architects	1
<b>TOTAL</b>	<b>31</b>

These persons are pronounced lovers of optical gadgets. Each of them had a large selection of such equipment. So a university professor of philosophy left in 1791 the following: 3 mirrors for anamorphosis, 1 zograscope, 2 lightable peepshows and a concave mirror with 7 diafanoramas. A Secretary of State of Holland and West Friesland had in 1823 the following: 6 mirrors for anamorphosis, 1 zograscope and a concave mirror with 22 diafanoramas, meanwhile, in 1835 a decedent with no name and occupation had: 1 magic lantern, 3 mirrors for anamorphosis, 1 zograscope and 6 diafanoramas. The fact that Jan Paauw Jr. (1723–1803), the famous Leiden professor of natural sciences, had a very extensive collection of optical objects will surprise nobody. His estate contained the following items: 3 camerae obscurae, 2 magic lanterns, 3 peep-boxes, 3 mirrors for anamorphosis, 1 zograscope and 6 different burning mirrors with 8 diafanoramas.

### HOW WERE THE PAINTINGS VIEWED?

Based on the traditional sources we know that the diafanorama had the function of an accessory for the burning mirror. This optical instrument was already present in the hands of private enthusiasts at the beginning of the 18th century and initially was mostly of polished metal. Really good mirrors were made of cast glass, which was covered from behind with a thin layer of silver foil. The burning mirror served for a long time, even without the presence of special accessories, as a viewing game. What made the burning mirror so fascinating and attractive was its ability to show known things in a way that was different than expected. Depending on the distance of an object to the burning mirror, there are various options to show images in same size or reduced or enlarged, upright or upside down and in front of or lying (far) behind the mirror. The mirror may, depending on the curvature, also show images of things that are not visible to the viewer, because the angle of view does not permit this. One of the possibilities was, for example, that such a concave mirror could show you shaking hands with yourself. As with the magic lantern, magic seemed to be in this game. Before 1700 the burning mirrors were very rare, but in 1720 they were already present here and there, although the size was modest. It is said that an enthusiast in 1740 had two metal mirrors of 20 and 38cm in diameter and a glass mirror of about 22cm diameter. Even in the 1760s, a diameter of 22cm was something special. Some time later there were already some with a diameter of 50cm and more, and in 1830 burning mirrors were made with sometimes about 1 meter in diameter. The catalogues of estate auctions provide information about the lighting that was required for the concave mirror and the diafanorama. The descriptions are for example as follows: 'A brown box with appropriate Blakers for glasses for the burning mirror' or 'a box with Blakers for demonstration of painted glasses for the burning mirror', or 'a box to put light into it, for both a large and a small burning mirror'.

We know what such a 'box with Blakers' looked like because in

an exhibition that took place in 1987 in Dordrecht (NL) the original lighting for the burning mirror and the diafanoramas was present. The box that I call 'light box' from now on is a stable wooden box of about half a meter in length with a height and depth of about 15cm, completely lined on the inside with sheet metal. One of the long sides is open. On the base are four thick candles. This light box was never a serial product, but large differences between the light boxes as a light source for the burning mirror are improbable. The light fell on the back of the diafanorama and one could see a mirror image of the illuminated display in the burning mirror. Of course the whole room had to be shrouded in darkness. The viewing arrangement is shown in fig. 16.<sup>6</sup>



16.

Visiting played an exceptionally important role in the life of well-respected people. Visits served largely to strengthen relationships and to meet new influential people. Spending the evening only in conversation was too boring. Other pastimes, such as a ride in a horse-drawn carriage or board games, could not be repeated endlessly. Therefore, it was good to be able to offer visitors something new from the wonderful world of natural science. They could enjoy backlit prints in peep-boxes, an anamorphosis or a magic lantern show. One such pastime was a performance with diafanoramas. We do not know how exactly this performance proceeded. It could have been as follows. The host was glad to once again have an opportunity to show off his specialty. Earlier in the day he would have given his servants the order to bring the diafanoramas with light box, candles and concave mirror near to the dining room. When he saw the time had come, he would apologise to the party in the salon and go to the dining room. There, the chairs that stood at the large dining table were put away, so that the table was free in the room. The concave mirror and the light box were placed on the table along with a diafanorama. Then the candles were lit in the light box. The host moved the diafanorama and the mirror back and forth until the image was as sharp and bright as possible to look at in the mirror. The other lights were extinguished and now the host could invite his visitors to enter. Then, when the party came into the darkened room, their eyes fell directly on the bright mirror image. From three sides of the table one after another enjoyed the lighted diafanorama, admired the remarkable aspects of the depth and width, plus the unusual distortions caused by the mirror. They talked about it and of course commented on the art and quality of the performance.

Such a performance would take some time, but no more than about six or seven of these diafanoramas were probably shown during the same evening, even if the host possessed more. This meant that a show with diafanoramas was always a very special event. Its main attraction was being able to see the image in a concave mirror. And it was in addition an image that always changed, depending on the position occupied by the viewer. For most images no explanation needed to be given. The diafanorama spoke generally for itself. Originally, the possession of this optical gimmick undoubtedly enhanced the social prestige of its owner. It is not surprising that the diafanorama was so loved, even though its cost was very high compared to other viewing pleasures such as the magic lantern, peepshows etc.

The diafanorama provided an opportunity to create images with a unique perspective illusion, which no other prints or paintings could do. Today, even if we look at the diafanoramas without a burning mirror, they have not lost their charming effect.

Finally, I would like to repeat that it was Mrs Hermina Christiane Kuijper MA, who rediscovered and secured the knowledge about these wonderful images.

6. The shown concave mirror has a diameter of only 23cm but it illustrates how the effect would be with a bigger mirror. In particular the effect of depth is completely visible in the concave mirror and seems stronger than looking at the diafanorama without a concave mirror. The use of real candles and changing the viewing-point give surprising additional effects.