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Impressionism in Holland and the Weather in the "Hague School"

Contribution on the occasion of the exhibition "[Clouds and Light. Impressionism in Holland](#)", Museum Barberini, Potsdam, 8 July - 22 October 2023

The term "Hague School" refers to Dutch landscape painting in the second half of the 19th century. This phase is also called the second Golden Age of Dutch painting, because although the Hague School represented the impressionist view of nature, it nevertheless referred to the great masters of the 17th century.

However, while the landscape painters of the 17th century carefully composed their landscapes and assembled them from individual, realistically rendered elements, i.e. they brought "invented realities"¹ to the canvas, the approach of the Hague School was radically different. Following the emerging realism of the French painters of the 19th century, they strove for a direct approach to nature. This realism must not be understood as an attempt at straightforward depiction of what is seen, but as a rendering of the artists' feelings in the face of a non-idealised environment. It is thus a departure from Romantic conceptions of nature. Impressionism in Holland has its roots in the Hague School.

Wind, clouds, sun, rain, heat and cold – the conscious experience of the weather shaped this new generation of artists who turned their gaze to nature from around 1850. Thanks to modern aids such as ready-mixed tube paints and portable box easels, they were able to capture their landscape impressions on canvas directly in front of their subject.

They exposed themselves directly to the weather. The feelings associated with this were to be expressed in their paintings in a comprehensible way. Their aim was therefore not a photographically precise representation of the landscape, but the reproduction of the special atmosphere in very specific weather conditions. The viewers of her paintings were thus supposed to feel in their imagination something similar to what the painters felt when working in nature.

The exhibition at the Museum Barberini Potsdam "[Clouds and Light. Impressionism in Holland](#)" therefore bears a programmatic title. Light shapes our impression of the landscape, and clouds, according to the American meteorologist S.D. Gedzelman, are its soul.²

Two centuries of tradition

Meteorological phenomena, the weather in all its diversity, already left its mark on the paintings of the 17th century masters. In this respect, 17th-century Dutch painting represented a revolutionary breakthrough, for it overcame the wide-angle view of the transmitted world landscapes and depicted the proportions as the human eye sees the world. Still lifes, landscapes and the comparatively rare portraits followed the human scale. This may be due to the fact that in the 17th century the modern sciences with their profane-realist explanation of the world

¹ Hedinger (2001); Ossing/Brauer (2006)

² Gedzelman (2014)

broke through and gained a foothold in what was then probably the most modern nation in the world, the United Provinces, with its comparatively open society.³

The painters of the Hague School were very aware of the tradition in which they stood and they referred directly to the old masters. Only they did not compose nature into a painting, but transformed the real world into a powerfully sensitive image. Therefore, these paintings still tell us today what the weather was like at the moment they were painted. In the following, we will try to compare the weather in some paintings of the Hague School with meteorological reality.

The Life at the Sea



Fig. 1: Jacob Maris, "Mussel Fisherman" (1885), Rijksmuseum Amsterdam

The Netherlands is shaped by the sea. A long coastline and the weather coming in from the sea, i.e. the North Sea and the Atlantic, determine life. The painters

³ In detail in Ossing (2019), (2014)

of the Hague School took this up quite naturally as the theme of their engagement with nature.⁴

In the painting "*Mussel Fishermen*" by *Jacob Maris* (1885), two one-horse gigs are waiting in the mudflats to be loaded with mussels (Fig. 1). Two fishermen with the typical mussel forks fetch the shells from the mudflats, which are then burned in lime kilns to produce construction material.⁵ Mussels are collected in shallow, shallow water. For Holland, this means in the Wadden Sea at low tide. The seagulls in the sky also appreciate this, they can catch food in the mudflats.

Twice a day, fishermen have the opportunity to collect mussels. The work in the Wadden Sea is based on observing nature. The times of low tide and high tide have to be observed, and it is also important to know the location of the tidal channels and tideways, because the rising water at high tide fills them quickly and can cut off the way back.

The weather in the picture shows windy weather. One of the two boats lying on the mudflats has reefed its sail. The sails of the second boat bear witness to turbulent wind. Even the flat waves on the mudflats show white crests. So there is a stiff breeze.

The piled-up cumulus clouds fit the weather. Rain is falling from the cumulus at the right edge of the picture, as indicated by the grey colouring below. Fresh maritime air with unstable vertical stratification of the atmosphere leads to such cloud formation. Gusty winds, especially near the coast, shower clouds and a sun-cloud mix are the defining elements in this weather (Fig.2).



Fig. 2: Cumulus clouds in maritime arctic air with rainshowers in the distance (Cu con, 27.08.1978, ESE, 12:00 CET, Neustadt i.H., photo: F.Ossing) ⁶

It is striking that Maris, like the Dutch masters of the 17th century, depicts the clouds disproportionately large towards the horizon. The reference to tradition is

⁴ in detail Hartwig (2023a)

⁵ M. Philipp, pers. information, Aug. 2023

⁶ All names of clouds, their subtypes and associated phenomena follow the "International Cloud Atlas", Vol. II, of the World Meteorological Organization WMO (Geneva, 1987).

also abundantly clear in the depiction of everyday life, as can be seen, for example, in a comparison with Jan Porcellis' painting (1622) in [Greenwich](#), which also deals with the daily work of fishermen and shell collectors in the Wadden Sea near the beach.

Another painting by *Maris* shows a *fishing boat* lying on the mudflats of the Wadden Sea at low tide. It is a flat-bottomed boat, a *bomschuit*. These barges were towed up the beach and could easily be brought back into the water at high tide. Bomschuites have been used in coastal fishing since the 17th century (Fig. 3).



Fig. 3: Jacob Maris, "Fishing Boat (Bomschuit)" (1878), The Hague Art Museum

At the top of the boat mast a small flag is waving horizontally in the wind. On the left edge of the picture a mussel collector is going about his work.

As the stretched pennant indicates, the wind is blowing at windforce four, perhaps even five in gusts. The weather is uncomfortable. On the horizon, between the ship and the fisherman, a rain shower is diffusely visible. The heap clouds cover the sky almost completely. Only at the upper left edge of the picture does a small vista allow a view of the blue sky. Directly below, a small dark-grey wisp of cloud indicates the rainy weather. Such wispy clouds bear the meteorological technical term "pannus", Latin for rag, tatters, and often occur as accompanying clouds in showers. They are a good indicator of gusty weather. Some of these torn cloud parts are also indicated in the right part of the picture.



Fig. 4: Pannus clouds of bad weather (Cu fra pan, As op, 14.06.2019, 21:16 CEST, Berlin, WSW, photo: F.Ossing)

A wide sky over a flat landscape

The Dutch flat landscape almost inevitably demands a view on the wide and high sky. The masters of the 17th century consistently allotted up to three quarters of the painting surface to the sky and treated what was happening on the ground as almost secondary. In contrast, 200 years later, the painters of the Hague School made it a determining part of the representation. But they also gave the sky two-thirds of the painting's surface.

Willem Roelofs depicts a landscape in the surroundings of The Hague, near Stompwijk (Fig.5).⁷ It is early autumn, the trees on the right-hand side of the picture already have yellowish foliage, as do some of the shrubs in the bushes that extend from the left to over the middle of the painting.

⁷ M. Philipp, pers. information, Aug. 2023



Fig. 5: Willem Roelofs, "Landscape in the Vicinity of The Hague" (ca. 1870-1875), Rijksmuseum Amsterdam

The shadows cast by the trees suggest the time of day. The sun is already lower in early autumn than in summer. Nevertheless, the trees do not cast long shadows. So we can assume early afternoon.

It has been raining, a large puddle lies on the path. The clouds, however, show no precipitation, so the rain must have fallen before.

The wind is blowing from right to left, roughly from west to northwest. The windmill on the horizon has also turned its wings in this direction.

Such a weather situation arises after the passage of a cold front. This brought the rain. Now the weather has calmed down. The wind blows weakly to moderately, as the limply hanging sail of the boat on the horizon also indicates. The cumulus clouds are arranged in several bands. Across the line of sight, the dark undersides of the clouds run parallel to each other to the horizon. These cloud bands follow the wind direction. Such cloud streets can often be observed in this weather situation, especially near the coast.



Fig. 6: Parallel bands of cumulus clouds (Cu med rad. Ci fib, 19.07.1996, Potsdam, 11:30 CEST, W, photo: F.Ossing)

Rainbows are rarely found in 17th century Dutch painting, paintings such as Jacob van Ruisdael's depiction of this phenomenon of atmospheric optics ("[The Jewish Cemetery](#)", Dresden and Detroit) being the exception. The Hague School's outright approach to the natural environment is particularly evident here, and Willem Roelofs made the play of colours in the rainbow his own (Fig. 7).



Fig. 7: Willem Roelofs, "The Rainbow" (1875), Art Museum The Hague

Heavy rain falls from a large shower cloud, in front of which a semi-circular rainbow spreads out. As early as the 17th century, the French philosopher René Descartes described the ray optics of the rainbow for the first time. But it was not until the beginning of the 18th century that the British physicist Isaac Newton was able to satisfactorily explain the formation of the colour spectrum in the rainbow.

Anyone looking at a rainbow always has the sun behind them. The white sunlight is refracted by the raindrops, broken down into its colour components and reflected back to the eye of the observer. In the main rainbow, the short-wave blue light is on the inside and the long-wave red light is on the outside. In clear light, a weaker secondary rainbow can often be seen. This is further out and has the colour arrangement of blue to red exactly reversed (Fig. 8). Willem Roelofs' painting does not show this secondary, outer rainbow.

It is late summer or early autumn, as the foliage of the trees shows. The afternoon sun shines through a gap in the clouds and casts a clearly visible light-shadow border on the meadow. We look east, the wind driving the rain in from the north. A blast of cold air at this time of year is responsible for such showery weather. The clearer the air, the more brilliantly the colours of the rainbow shine. Roelofs' painting thus shows us weather with polar sea air freshly flowing in from the north.



Fig.8: Rainbow in polar air mass, with a faintly visible secondary rainbow (Cb cap inc, Berlin, 26.05.2009, 19:52 CEST, ESE, photo: F.Ossing)

City views

The example of two city views shows how the Hague School took up the historical guidelines, but at the same time adapted them to their view of the world.⁸



Fig. 9: Jan Hendrik Weissenbruch: "View of Haarlem" (ca. 1845 - 1848), Art Museum The Hague

⁸ in detail: Philipp (2023a)

Jan Hendrik Weissenbruch painted a *view of Haarlem* from the dunes west of the city (Fig. 9). With his painting Weissenbruch quotes the meteorologically very precise views of Jacob van Ruisdael.⁹

The view leads exactly to the south. St Bavo's Church is illuminated by the sun from the northwest. So it is a late afternoon in summer. The wind is blowing from the west, as the plumes of smoke from the four large chimneys indicate. The cloud of the steam engine in the middle ground, below the church, indicates a weak wind condition because it keeps its closed form and is not tattered by turbulent winds.

Moderately developed cumulus clouds are visible in the sky. The view to the horizon is clear and not obscured by haze. Nevertheless, the sky between the clouds is not pure blue, it has a whitish tinge. This indicates a light veil of clouds in the middle or high atmospheric level. Wind direction and cloud pattern indicate a shallow high between two low pressure areas in a lively westerly flow. The sky colouring and the weak vertical development of the cumulus clouds indicate that we are not dealing with freshly inflown polar sea air. We are dealing with an aged maritime air mass. This can originate either from the subtropics or the sub-polar region. It changes its character on its long journey over the ocean water, i.e. it ages: the weather parameters that determine it, such as temperature, moisture content, type and quantity of clouds, etc., have therefore been changed accordingly by the warmer sea.

Thus, some 200 years later, Weissenbruch is not inferior to Ruisdael in the sharpness of his meteorological observation. But he looks at the city as it appeared in the 1840s, the symbolic linen bleaches of Jacob van Ruisdael have been replaced by profane cow pastures, and the reference to modern times given by the railway train cannot be overlooked either.

Johan Barthold Jongkind chooses a different approach in his *View of Delft* (Fig. 10). He completely detaches himself from the [iconic model](#) of Jan Vermeer. Against Vermeer's compositional construction, he sets a real veduta of the city.

The tower of the Old Church, the Oude Kerk, rises impressively from the silhouette of the city of Delft. To the left of it you can see the smaller tower of the New Church, the Nieuwe Kerk.

This makes it clear: we are looking south-southeast towards the city. The large tower of the church is only illuminated by the sun in the lower part, the upper part lies in the shadow of a cloud. The city itself is also in the shadow of a cloud. The position of the sun shows that it is afternoon, because it is in the west.

Two sailboats are moored on the deep water, the Vliet, part of the Rhine-Schie Canal, which runs through Delft.¹⁰ One is illuminated by the sunshine, the other, a little further away, is in the shade.

⁹ cf. Ossing (2002)

¹⁰ M. Philipp, pers. information, Aug. 2023



Fig. 10: Johan Barthold Jongkind: "View of Delft", 1844, The Hague Art Museum

This distribution of light and shadow on the ground explains the weather. A mighty cumulus cloud piles up over the city. The weather is showery and a heavy downpour is coming from this heap cloud. Behind it you can see other cumulus clouds of the same size. At the left edge of the image another cumulus cloud can be seen, whose upper edge already looks somewhat frayed. It has already passed the peak of its development, rained off most of its precipitation and is disintegrating.

The dark-coloured cloud fragments on the upper right edge of the picture also belong to a large cloud that is dissolving. They appear torn. When shower clouds lose their sharp contours, they are in the decay stage.

These observations suggest a cold air inflow. The inflow of cool, subpolar sea air is vertically unstable stratified. This leads to the development of strong shower clouds behind the cold front that has already passed through. Meteorologists call this phenomenon "post frontal weather".



Fig. 11: Strongly developed cumulus with shower formation (Cu con pra, Foto: F.Ossing)

Wind power: modern technology since the 17th century

There are few buildings that are as iconographic for a nation as windmills are for the Netherlands. Harnessing the power of the wind is one of mankind's oldest energy technologies, but nowhere have windmills found such a sense of identity as in the Netherlands.¹¹ They have been common there since the 14th century. There is an important reason for this: large parts of Holland lie below sea level, for example parts of the Zuiderzee, but also the Haarlem Sea. These waters were dammed up with dikes. Then they were pumped dry - with the help of wind power, which drove the scoop wheels. Dutch windmills were therefore mainly pumping stations. Their permanent task was the continuous drainage of land. Even today, there are more than a thousand windmills in the Netherlands, some of which are still pumping water.

The dyked areas of land newly gained by pumping are called polders. The painting by *Jan Hendrik Weissenbruch "Polder Landscape with Mills"* (Fig. 12) shows a polder drainage channel. Two trestle windmills pump the water out of the polder. Perhaps the horseman on the polder dike is checking the condition of the dam. A sky of stratocumulus clouds stretches above him. This makes it clear that not only water pushing in, but also the rainfall with its precipitation had to be pumped out. The wind is only blowing weakly, as indicated by the almost motionless water surface. The stratocumulus clouds also indicate calm weather.

¹¹ detailed in Philipp (2023b)



Fig. 12: Jan Hendrik Weissenbruch: "Polder landscape with mills" (1890), Museum Singer Laren

Polder soils are fertile, but heavy and often saline. In Holland, they are primarily suitable for grassland. Grazing cows provide the milk for the famous Dutch cheese and meat. Polders are usually not suitable for growing cereals. As early as the 17th century, Holland imported its grain from the Baltic region. Here it was ground in windmills.¹²

Another work by *Jan Hendrik Weissenbruch* is "*The View of Three Mills*" (Fig. 13). The windmills depicted here are of a more modern design. They are stone buildings in which not the entire mill, but only its head, has to be turned into the wind. The all-round operating surface led to the name "gallery windmill". From the 17th century onwards, they replaced the trestle windmill in Holland and northern Germany.

Such inner-city mills often ground grain. But in Holland they were also used to grind mustard and oil seeds, to drive sawmills and to produce paper. Wind power was the technology before the beginning of industrialisation.

¹² North (2001)



Fig. 13: Jan Hendrik Weissenbruch: "View of three mills" (1890), Stedelijk Museum Amsterdam

The "Stone Mill" by *Jacob Maris* (Fig. 14) dates from the same year as the two mill depictions by Weissenbruch. This gallery mill stands on the edge of a village. In the composition of the picture, Maris refers to the famous depiction of the [windmill of Wijk bij Duurstede](#) by *Jacob van Ruisdael*. As in Ruisdael's work, there is a millstone in the right foreground, in a prominent position in the picture. It indicates the purpose of the mill, the grinding of grain. This cannot be done without wind, which moves the dense cumulus clouds across the sky. As in Ruisdael's work, they cover almost the entire sky. These clouds, the canvas on the windmill blades and the birds make the wind visible in the flat landscape. The

wind is not particularly strong, because the sails on the wings are not taut, but hang down limply. The cumulus clouds also rise almost vertically, which speaks for weak wind and only little change in wind speed with altitude.



Fig. 14: Jacob Maris: "Stone Mill" (ca. 1890), The Hague Art Museum



Fig. 15: Cumulus clouds with moderate wind (Cu con, 30.07.2017, 13:17 CEST, near Hedemora/Schweden, ~W, photo: F.Ossing)

From The Hague to the Modern Age

The Hague School, it can be said, represents the starting point for Dutch Impressionism and, going beyond that, Amsterdam Neo-Impressionism and Modernism.¹³ With three examples, we want to trace how the rendering of weather in landscape changed along the way.



Fig. 16: Vincent van Gogh: "Flowerbeds in Holland" (ca.1883), National Gallery of Art, Washington

Vincent van Gogh was shaped by the Hague School. His painting *Flowerbeds in Holland* (Fig. 16), for example, still shows the muted colours of the Hague artists, but it already hints at his fundamentally new approach to colour.

Holland and the flower trade are synonymous with each other. Thus van Gogh's painting shows an everyday scene: flowers grown for the trade, regularly arranged in rectangular beds, each bed monochrome with a uniform plant type. Between these colourful carpets the gardener walks and inspires his plants. Everyday scenes like these were among van Gogh's favourite subjects.

The sky also corresponds to this unexciting, almost monotonous scenery. Van Gogh covers the sky with the most ordinary of clouds, the stratus clouds. This type of cloud, stratocumulus in meteorological terms, is an everyday cloud that neither represents good nor bad weather nor announces a change in the weather. The World Meteorological Organisation (WMO) states that stratocumulus is the most common cloud type in the world.

¹³ detailed in Hartwig (2023b), Barentsen (2023)

If you look closely, the sky in the painting has gaps in the clouds, but the landscape is still in the shadow of the clouds, as is characteristic of this type of stratiform cloud. Following the laws of atmospheric optics, the fields of hyacinths depicted by the master should therefore also have muted colours. Van Gogh, however, gives them a colourful radiance of their own, which already hints at the distinct colourfulness of van Gogh's later landscapes.¹⁴



*Fig. 17:
Stratocumulus
sky with gaps
between the
clouds (Sc str
pe, St fra,
29.12.2000,
12:00 CET, N,
Coesfeld-Goxel,
photo: F.Ossing)*

Piet Mondrian's "Windmill in the Evening" from 1917 (Fig. 18) dissolves the closeness to nature by concentrating on structures. It is early evening, the observer is looking at the setting sun or the rising moon. In the backlight of the celestial body, the windmill appears as a silhouette. The wings are not covered with canvas, the exposed latticework of the individual mill wings underlines the almost graphic concept.

The sky's appearance is also structured. The clouds depicted indicate a calm sky. Sheepish clouds (altocumuli) cover the sky with an area-wide pattern. The edges of these clouds allow the sunlight to shine through to the viewer. The scattering of light at the cloud edge creates a bright, radiant ring, while the cloud body itself is sufficiently dense and therefore more opaque. That is why it appears dark. Piet Mondrian enhances this effect in some of these clouds, he applies another, darker colouring in the centre of the cloud.

¹⁴ cf. Ausst.Kat. Bremen 2002



Fig. 18: Piet Mondrian: "Windmill in the Evening" (1917), The Hague Art Museum



Fig. 19: Altocumulus sky with an extensive pattern (Ac str pe, 27.09.2001, Malga Arza/TN, Italien, 15:50 CEST, W; photo: F.Ossing)

Altostratus clouds occur in the midlevel of the atmosphere, which in our latitudes lies at an altitude of between about two and seven kilometres (cf. Fig. 21). Preferably, such fleecy clouds are found in the range of 2500 to 3500 metres altitude. A meteorological rule of thumb is that altostratus often indicate a change in the weather.

The fundamental departure from the naturalistic landscape depiction of the Hague School becomes particularly clear in *Jan Sluijters' "Landscape with Cyclists"* (Fig. 20). The sun is already low in the late afternoon. Two poles and the three cyclists are already casting long shadows. From the horizon, a white veil of clouds stretches across the sky. Regularly arranged cloud spots and a long cloud line lie below this veil. Their structure and bright yellow colouring dominate the sky.

Altostratus clouds in the middle atmosphere often form such patterns. The blue sky can be seen between them. In the painting, this is indicated at the upper edge of the picture. The elongated cloud roll is a special form of this cloud type. It forms in flowing air like a crest of a wave (cf. Fig. 20 and [here](#)).



Fig. 20: Jan Sluijters: "Landscape near Laren with cyclists", ca. 1911, Singer Laren

Although this gives us an idea of the structure of the sky that influenced the painter, it does not explain the colours in the painting. In particular the low sun sometimes creates a spectacular play of colours in the sky. We do not mean the evening glow here, but the multitude of colours sent into the viewer's eye by the clouds in the various atmospheric storeys. These light effects are the subject of

Sluijters' painting: not the atmosphere as such, but the play of colours and the structuring of the sky created by it.



Fig. 21: Elongated altocumulus cloud with fleecy clouds, cirrus veil above (Ac len rad, virga, Cs, Ci fib, 27.01.1975, E, 10:05 CET, Berlin, photo: F.Ossing)

The colours of clouds are explained by the passage of light through the atmosphere. Sunlight is white, but on its way through the atmosphere the individual colours of the light are changed differently by wavelength-dependent scattering. At mid-afternoon, the high clouds still receive the full sunlight, they therefore appear white. Clouds at mid-atmospheric level already show the more yellowish light of sunset. The low-lying cumulus clouds at the upper right edge of the image, which almost elude perception, already have red-coloured edges due to the late afternoon light.

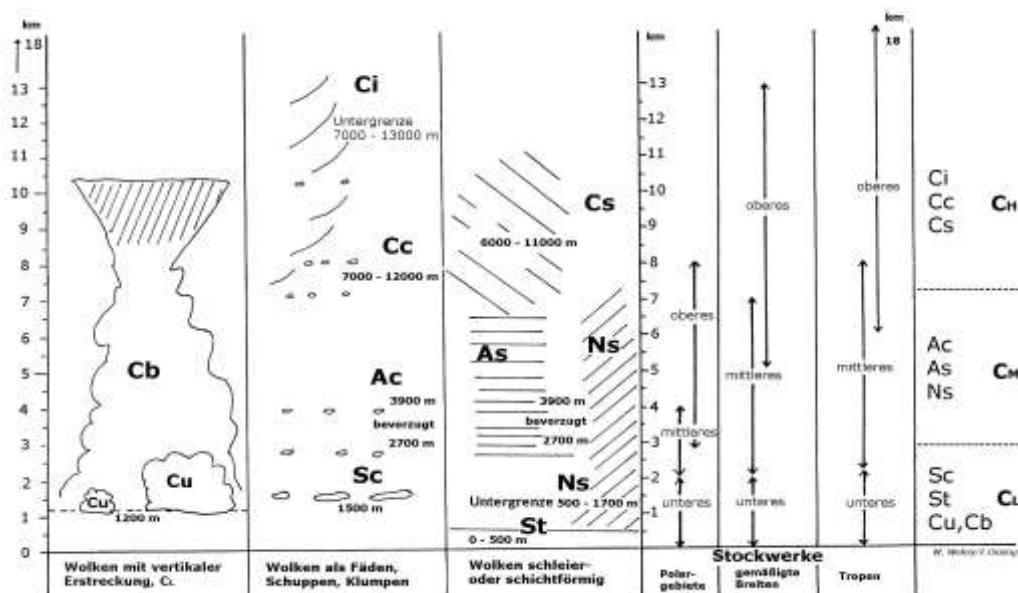


Fig. 22: Clouds of the different atmospheric altitude levels (Wehry/Ossing, 1998)

A European history of art and science

European landscape painting has its roots in the Netherlands of the 17th century. It left its mark on the depiction of landscape worldwide. Mondrian and van Gogh did not simply carry on this tradition, but set new milestones with a worldwide impact. The Hague School was the central place of engagement with the new conception of colour and structure that Impressionism brought with it.

The 17th century saw the emergence of modern science, and the question "What is colour?" has stirred minds ever since. The spectrum of light stands for physics, the colour wheel for physiognomic perception – it was not until the 19th century that it became possible to answer the question of "colour" in this way. These are not two opposing ways of explaining the phenomenon of colour, but two different facts, namely on the one hand the representation of the physical process of light as an electro-magnetic process, and on the other hand the description of its perception by the sense organs.

Chevreul's colour theory¹⁵ and his colour wheel were passionately discussed among the painters of the 19th century.¹⁶ It can be assumed that Maxwell's final physical explanation of the colours of light¹⁷ and Helmholtz's exploration of the physiognomic reception of colours¹⁸ also had their influence on the painters of the 19th century. Art and science, this is another line of tradition from the 17th century, are closer to each other than many people realise.

In any case, the Hague School plays a central role in the treatment of colour on the way from impressionist naturalism to the free development of colour and form. From here, a direct path leads to modernism.

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¹⁷ Maxwell (1865)

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Source: http://bib.gfz-potsdam.de/pub/wegezurkunst/start_en.html

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Addendum: Very-high quality reproductions of the paintings used in this article can be found here:

<https://www.museum-barberini.de/en/mediathek/14326/impressionism-in-holland-and-the-weather-in-the-hague-school>