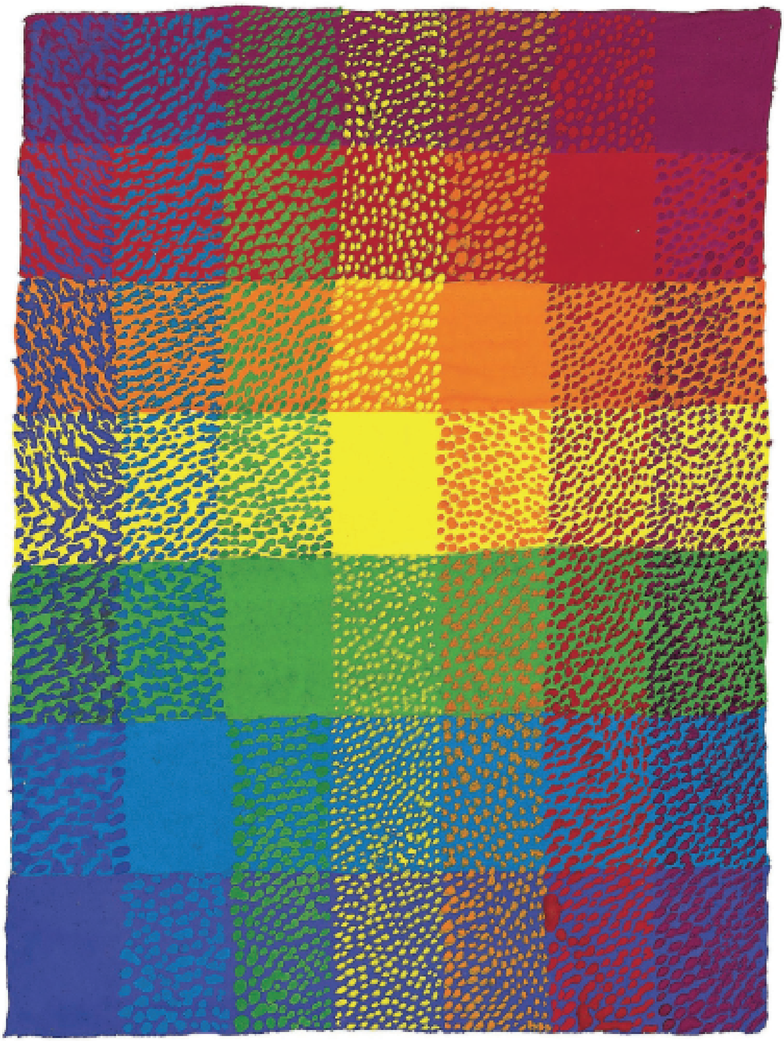
ROYAL TALENS

c o l o u r

A guide to colour and colour mixing



Contents

Introduction

The world around us is a constantly changing spectacle of colour. In order to capture this in a painting, one needs a knowledge of the theory of colour. The first three sections of this booklet outline the principles of colour theory:

The origin of colour
Properties of colours
Mixing colours

The usual view is that all colours can be mixed from the three primary colours red, yellow and blue. In theory this is correct. However, in practice this three-colour system of mixing turns out to have its limitations. Fortunately we are not dependent on the three primary colours alone. The system can be expanded in such a way that every conceivable colour can be mixed with others without restriction.

The mixing of colours is not the aim of painting. A painting is a flat surface. On it we can paint a representation suggesting a three-dimensional space, or one in which every hint of space is avoided. Simply by using the colours correctly this suggestion can be convincingly made. Therefore with the aid of examples we shall discuss the possibilities of achieving the desired result. We do this in the last section:

Painting with colour

We wish you much enjoyment on this voyage of discovery!

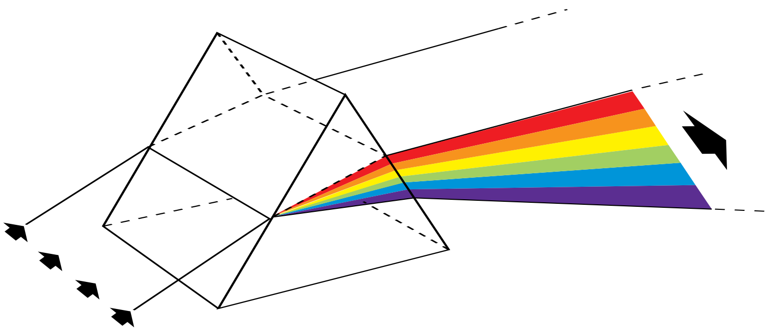
Note: The colours illustrated should be seen only as a guide, because the four-colour printing process imposes restrictions on the accurate reproduction of colours. This applies particularly to the orange colour band.

The origin of colour

Colour is created by the interplay of light, colour-giving substances and the human eye. In this section we shall look more closely at the role of light and colour-giving substances.

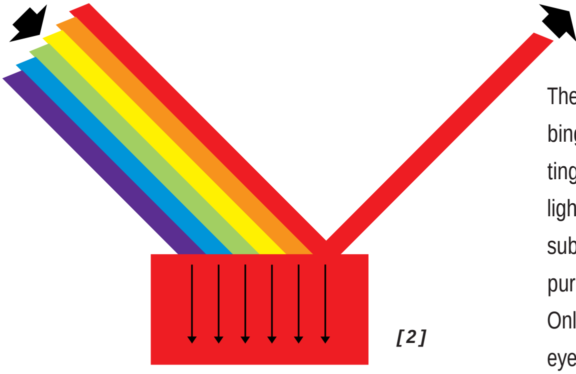
Light as the source of colour

Thanks to light we are able to perceive colours. In the dark we see nothing. White light is made up of all the colours of the rainbow. A triangular piece of glass, a prism, demonstrates this. If a beam of light passes through a prism, the different colours become visible. We call this series of colours the spectrum. In addition at either end of the spectrum there are invisible rays - at the red end infrared, at the blue end ultraviolet (ill. 1).



Reflection and absorption

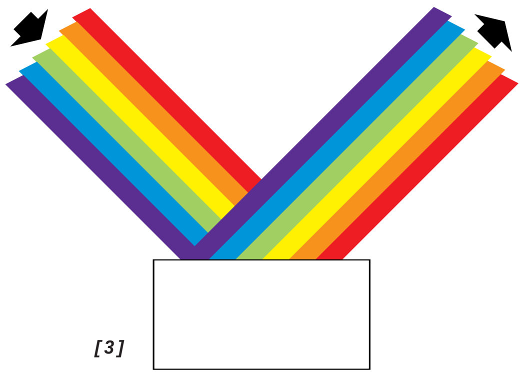
Most colours do not originate directly from a light source. They are created by an interplay of light, the human eye and colour-giving substances. Trees, flowers and fruits, human beings and animals, stones and even earth allow us to see countless colours without themselves generating light. They exhibit colours through colour-giving substances.



[2]

These substances have the property of absorbing a particular part of the spectrum and reflecting another. If we see a red object under white light, then this item contains a colour-giving substances which absorbs the yellow, orange, purple, blue and green components of the light. Only the red component is reflected back to our eyes. (ill. 2).

And what about white, black and grey? In theory these are not colours. A white object contains a substance which does not absorb any colour in the spectrum. The whole spectrum is reflected. With black we see the opposite. No colour is reflected, all the colours in the spectrum are absorbed. Grey is somewhere between white and black. An equal quantity of each colour is reflected, the rest is absorbed. The reflected colours mix to become grey. The lighter the grey (the further in the direction of white), the more of each colour is reflected. And vice versa. (ills. 3, 4, 5).



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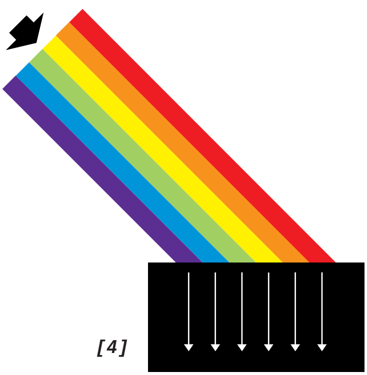

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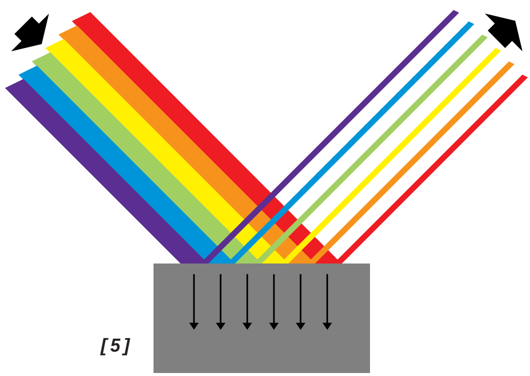

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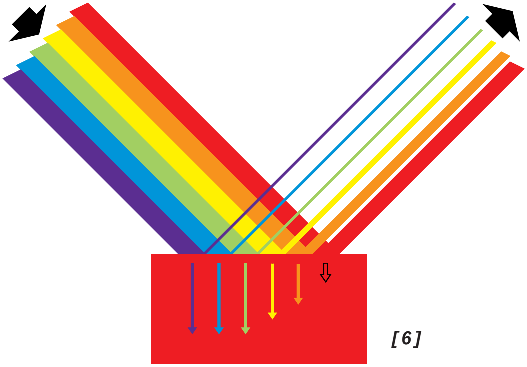
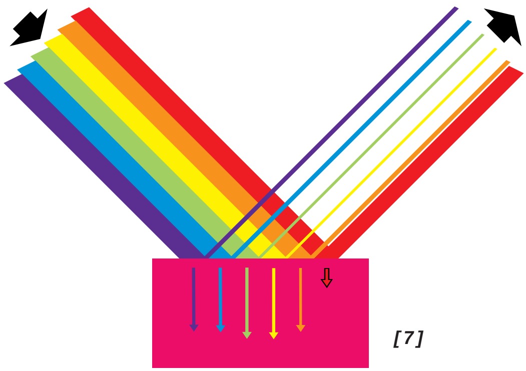


[6]

However, these examples are purely theoretical. In reality there are no substances which totally absorb a certain part of the spectrum and reflect a hundred percent of another. We can illustrate this with the colour red. From the many shades of red we shall select vermilion to begin with. If we check what portion of the spectrum is reflected in this red, we find that the red portion is the main one. But we see too that all the other colours are also present, especially orange and yellow (ill. 6).

Let us now look at the pink colour magenta. Here too the red portion of the spectrum again proves to be most evident. But equally all the other colours, notably violet and blue are also found (ill. 7).



[7]

To summerize no colour is completely pure. Every colour contains traces of all other colours. The colour most evident after the principal colour, will affect the principal colour. White, black and grey too are only pure in theory. An exactly identical amount of each colour is never reflected.

Dyes and pigments

We can subdivide colour-giving substances into two types: dyes and pigments. For the painter an important difference between the two is their lightfastness. Blended with paint or ink all dyes have poor to moderate lightfastness. The lightfastness of pigments varies from poor to excellent. The degree of lightfastness indicates the degree to which a colour-giving substance is affected by ultraviolet light. Ultraviolet is a constituent of both natural daylight and artificial light. It has the property of breaking down colour-giving substances: the colour 'fades'. The speed at which this happens depends on the lightfastness in combination with the quantity of ultraviolet light. Some colours fade after just a few weeks, others only after years or not all. A second difference concerns their solubility. Dyes dissolve in a liquid, pigments are insoluble.

Dyes*)

The lightfastness of dyes in paint or ink is poor to moderate. For this reason they are not used in artists' products. For educational uses or illustrative work lightfastness is of less importance. An original illustration has a temporary function and after publication can be stored in the dark. In the absence of light the colour does not fade.

Pigments

Pigments can be distinguished not only by their degree of lightfastness but also by other properties such as opacity, transparency and intensity of colour.

*)Dyes are used in only two products in the Talens range: Ecoline (except for white and metallic colours) and Waterproof Drawing Ink (except for white and black). All other Talens products are pigment-based.

Lightfastness

Lightfastness varies from pigment to pigment. Thanks to modern techniques we are constantly able to improve the quality of pigments. At present we have thousands of pigments to choose from. This enables us to replace traditional pigments with only moderate light-fastness by superior synthetically produced pigments.

The lightfastness of Talens products is indicated on tubes, labels and colour charts by means of the following symbols:

+++ = at least 100 years lightfast under museum conditions
++ = 25 – 100 years lightfast under museum conditions
\+ = 10 – 25 years lightfast under museum conditions
o = 0 – 10 years lightfast under museum conditions

Opacity and transparency

Another property of pigments is opacity or transparency. Paint with an opaque pigment will hide the ground from view when applied in a certain thickness. Paint with a transparent pigment is transparent at the same thickness. Not every opaque pigment is equally opaque; not every transparent pigment is equally transparant. Many variations are possible, from very transparent to very opaque.

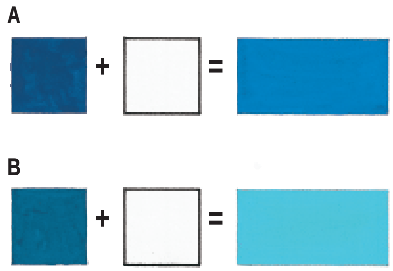
Talens uses the following symbols for this:

□	**transparent;**	very transparent
◻̸	**semi-transparent;**	slightly less transparent
◩	**semi-opaque;**	the ground is not completely hidden
■	**opaque;**	none of the ground is visible

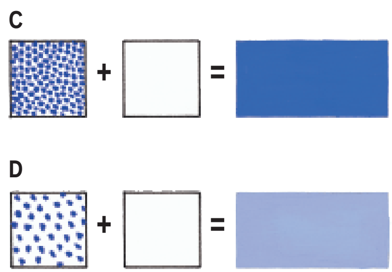
Opacity and transparency as properties of pigments are only visible if no opaque filler is added to the paint. However, one example of an opaque paint is Poster Colour (Gouache) which is based on an opaque filler, every colour of this type of paint becomes opaque, irrespective of what pigment has been used.

Tinting strength

The intensity of a colour determines how much of that pigment is necessary to achieve a certain concentration of colour. We shall take as an example two equal quantities of blue paint, each made with the same quantity of pigment. The difference is in the type of pigment: pigment A and pigment B. We then take equal quantities of the same white colour. When mixed with an equal quantity of white paint, the mixture containing the blue with pigment A is much more concentrated (darker) than that containing pigment B. Pigment A is therefore has a higher tinting strength (ill. 8).



In addition to the type of pigment the quantity of pigment also determines the tinting strength of a colour. Again we shall take as an example two equal quantities of blue paint. However, both are now made with the same pigment. The only difference is that more of this pigment has been include in blue C than in blue D. When mixed with the same quantities of the same white paint, blue C gives a more intense result than blue D (ill. 9).



The illustration gives a schematic representation of the quantity and size of the pigment particles in the colour.

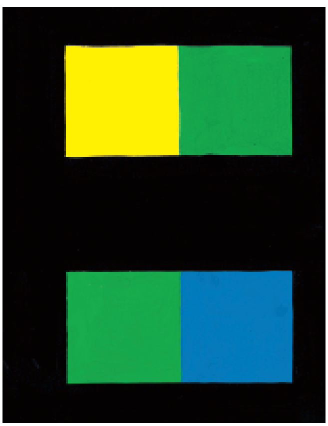
In addition the grinding of a pigment affects the tinting strength of the paint. Pigments are ground in a medium. The finer the grinding the higher the tinting strength.

Properties of colours

There are differences between colours. Colour names such as yellow, orange, red and violet indicate the first clear differences. In addition we distinguish dark and light colours, bright and soft colours and also warm and cool colours. In the existing literature different words are used for these properties or the same word is used for different properties. In this booklet we use the following terms to designate properties of colours: colour temperature, colour hue, brightness and saturation.

Colour temperature

We intuitively estimate the temperature in a yellow space as higher than that of a blue one. We call yellow a warm colour and blue a cool one. We see how relative this is when we mix yellow with blue. We then get green, i.e. colour made up of a warm and a cool colour. Compared to blue green is a warm colour, compared to yellow a cool colour (ill. 10).



Red is also felt to be a warm colour. If we mix blue and red, the mixture is violet. Compared to blue, violet is experienced as warm, compared to red it's cool.

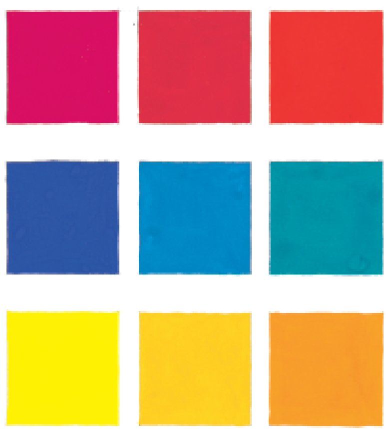
[11]

It can be even more subtle. Let us place two yellows next to each other. One of the yellows has traces of blue in it and the other traces of red. We experience one of the yellows as warmer compared with the other. Although yellow is a warm colour par excellence (ill. 11).

We cannot simply separate the whole spectrum into warm and cool colours. We can, however, state that blue is at the center of a cool area and orange yellow the center of a warm area.

Colour hue

The proportion in which the colours of the spectrum are reflected determines the colour hue.
In the section on ***The Origin of Colour*** we saw that no colour is completely pure:
every colour contains traces of the other colours in the spectrum.
The largest reflected portion of the spectrum determines the principal colour, for example red.
The second largest reflected portion, for example yellow, affects the principal colour.
Together they determine the colour hue. In this case we speak of a red with traces of yellow. A red with blue traces and a red with yellow traces are both red, but each have their own colour hue. The further apart the trace colours are, the greater the difference in colour hue (ill. 12).

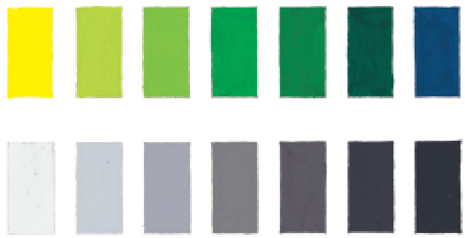


[12]

Brightness

The brightness of a colour indicates how light or dark that colour is. Every colour has a certain degree of brightness. No colour is as light (bright) as white, all colours are lighter (brighter) than black.

If we mix yellow with ever-increasing quantities of blue, we create a series from yellow to green to blue (ill. 13). We see that not only the colour hue and temperature change, but also the brightness. The colour becomes darker and darker (the brightness gradually decreases).

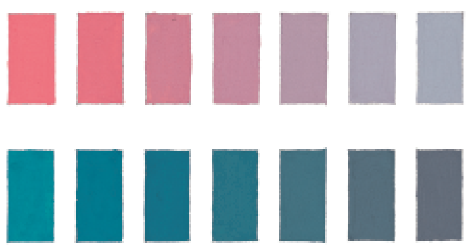


[13]

We can illustrate this by making a black-and-white photograph of this series. The colours are eliminated and we are left with a series of greys. This shows the differences in brightness. The same grey series can be mixed with white and black. So that for every colour a grey can be mixed with the same brightness as that colour.

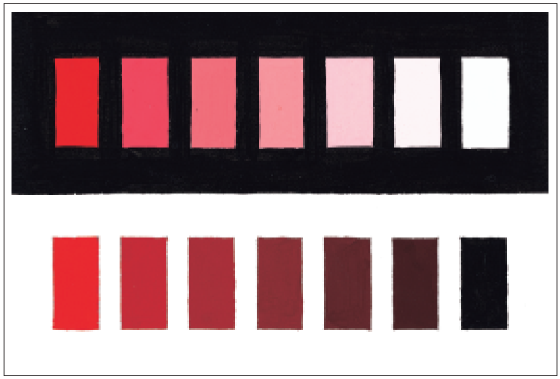
Saturation

A colour is saturated ('pure') when the reflected portions of the spectrum which together determine the colour hue strongly predominate. This means that few traces of other colours are present in the reflection. If the reflection contains many traces of other colours the colour is said to be unsaturated ('dirty'). If we mix a saturated colour with increasing quantities of grey with the same brightness as that colour, the saturation decreases. The brightness remains the same, the colour hue remains the same (ill. 14).



[14]

White and black are in theory completely unsaturated. If we mix a saturated colour with increasing quantities of white, the saturation decreases, while the colour hue remains the same. In addition the colour becomes lighter and lighter: brightness increases. By adding increasing quantities of black the brightness decreases as well as the saturation. The colour hue remains the same (ill. 15).



[15]

Saturated colours mixed with:

	white	grey*)	black
saturation	↘	↘	↘
brightness	↗	~	↘
colour hue	~	~	~

*) A grey that has the same clarity as the colour it is mixed with.

Mixing colours

We can mix colours in two ways: with light and with colour. Mixing with coloured light is called **additive** mixing. The more colours that are added, the lighter the result. All the colours together form white light.

Mixing with paint is called **subtractive** mixing, which in this context means that light is taken away. The mixed colour is always darker than the lightest of the colours with which it has been mixed.

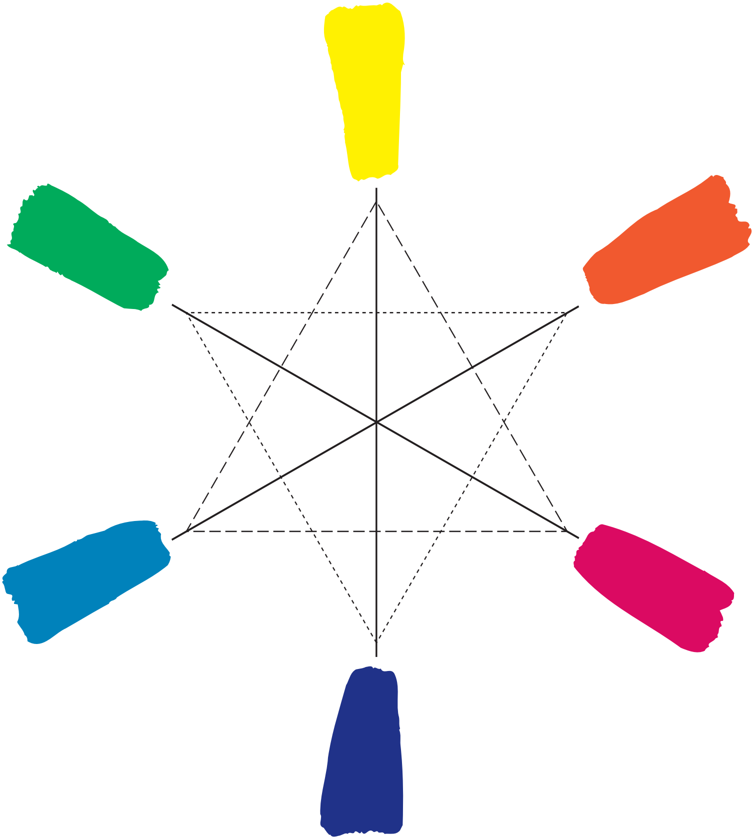
Every colour-giving substance absorbs a certain section of the spectrum. If we mix two colours, different sections of the spectrum are absorbed. Only the jointly reflected section is left.

We shall mix colours with paint, i.e. subtractively. We shall do this according to the **three-colour mixing** system and the **six-colour mixing system**. We shall also look at the phenomenon of optical mixing of colours.

Three-colour mixing system

Primary colours

With the three primary colours lemon yellow, cyan (blue) and magenta (red) we can mix any colour hue we wish. These colours are called **primary** because they cannot be mixed from other colours. The principles of mixing can be learned using primary colours. Talens supplies a special gouache mixing set. In addition to the primary colours this contains white and black. The Ecoline range also contains the primary colours.



[16]

To begin with, we mix yellow with blue, blue with red and red with yellow. That gives us green, violet and orange respectively (ill. 16). The proportion in which the colours are mixed depends on the tinting strength of the paint. It is a good idea to begin by mixing small quantities to avoid wasting paint.

[*17*]

If we mix the colours next to each other in the six-colour circle, we obtain six new colours (ill. 17). By doing the same with the colours in the 12-colour circle we obtain twelve new colours.

[**18**]

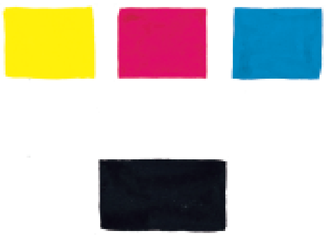
The 24-colour circle contains various yellows, greens, blues, etc. (ill. 18). There are yellows with red traces and yellows with blue traces, bluish violets and reddish violets. By constantly mixing adjacent colours the circle can in principle be expanded into infinity. The colour areas merge into each other like the colours of the spectrum.

Primary colours with white and black

Countless colour hues can be mixed with the three primary colours. With white and black we can mix countless greys. By combining these two possibilities we can in principle mix any colour we like.

Primary colours with white, without black

The colours that we need to paint all the objects that surround us can also be mixed without black. Black and grey objects have more colour than is apparent at first sight.

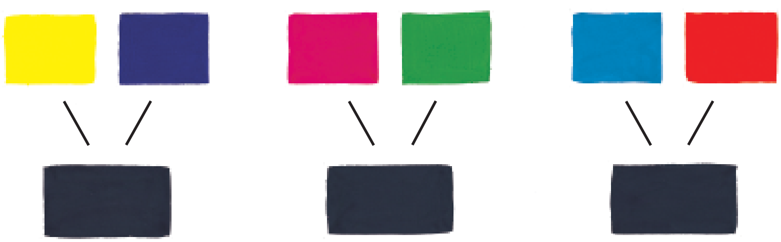


[19]

If we mix primary colours in the right proportion we create a grey which is almost black. This is because in the mixing only the jointly reflected section of the spectrum remains. When the primary colours are mixed that section is very small. Almost no light is reflected. This dark grey is dark enough to create the impression of black in a painting. Instead of black, dark-grey can also be mixed instead of black with white and a colour hue into any colour required (ill. 19).

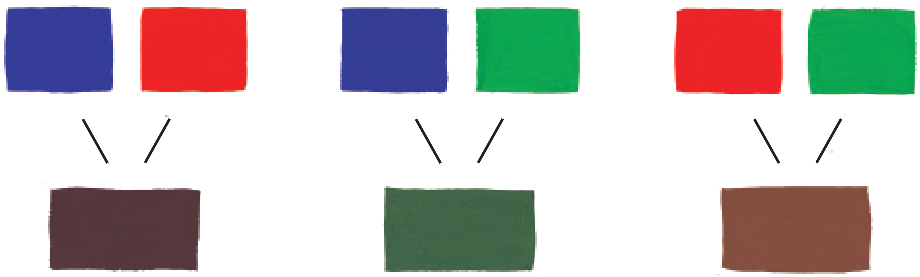
Colours opposite each other in the circle are called **complementary** colours. Two complementary colours together contain the three primary colours. Mixed in the right proportion these also create black colours, and of course greys as well with the addition of white (ill. 20).

[20]



Orange, green and violet are called **secondary** colours. Two secondary colours combined also contain the three primary colours. However, they do not cancel each other out as completely and we do not obtain a black colour. Whatever proportion they are mixed in, the common primary colour is always dominant and hence determines the colour. A colour mixed from two secondary colours is called a tertiary colour (ill. 21).

[21]

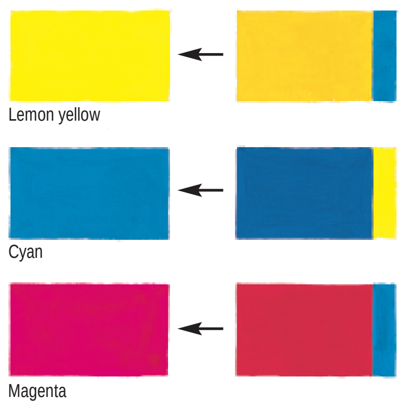


Three secondary colours combined in turn contain equal quantities of the three primary colours so that a black colour can also be mixed from them, as well as greys in combination with white.

Limitations of the three-colour mixing system

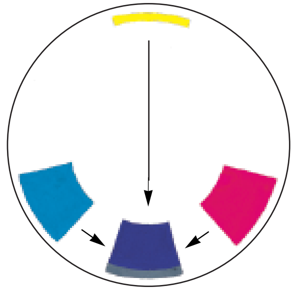
Lemon yellow, cyan blue and magenta are saturated colours. Nevertheless the three-colour mixing system has the limitation that the saturation of intermediate colours may be greatly reduced. The following examples illustrate this:

Lemon yellow is a yellow with blue traces. Cyan is a blue with yellow traces. Magenta is a red with blue traces (ill. 22).



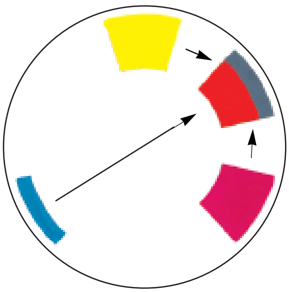
[22]

The violets mixed from cyan blue and magenta contain, in addition to blue and pink, the yellow traces of the blue. Yellow and violet are complementary colours. Equal parts of yellow and violet make grey when mixed, so that the violets are less saturated (ill. 23).



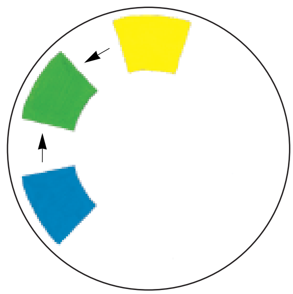
[23]

The saturation of the oranges is sharply reduced as a result of the complementary traces of both pink and yellow (ill. 24).



[24]

Only the greens are saturated. The colour hue of both lemon yellow and cyan blue have no traces which do not belong to the green part of the spectrum (ill. 25).



[25]

Six-colour mixing system

In order to be able to make a colour circle with only saturated colours, we add three new colours: ultramarine (a blue with red traces), a yellow with red traces and vermilion (a red with yellow traces). Orange and violet are now also saturated (ill. 26).

[26]

[27]

By mixing adjacent colours the circle can be further expanded (ill. 27).

By adding white, grey or black the brightness and saturation of each colour hue can of course be changed, just as in the three-colour mixing system.

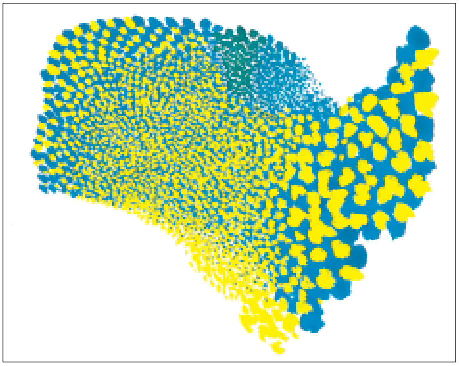
The six-colour mixing system also offers more opportunities for approximating black. The yellows, reds and blues can be mixed in different combinations. The proportion in which they are mixed determines the colour hue of the dark grey. If we want to mix a grey without a colour hue, a **neutral** colour, those proportions must be very precise. The darkest neutral grey is obtained by mixing all six colours. This grey is so close to black that the difference can only be seen when compared with pure black paint.

Optical mixing of colours

Optical mixing of colour means that a mixed colour is suggested without actually mixing colours together. We distinguish **pointillistic** and **glazing** colour mixing.

Pointillistic mixing

Pointillism means painting with dots. To obtain a green colour we do not mix yellow and blue paint, but paint yellow and blue dots close together on a surface. The surface will then give the impression of being green. The smaller the dots the more complete the mixture will appear (ill. 28).
Here too complementary colours make the mixed colour unsaturated (dirty).



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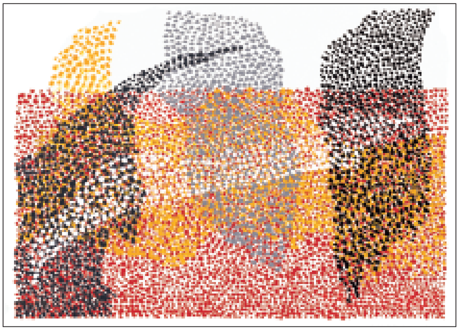
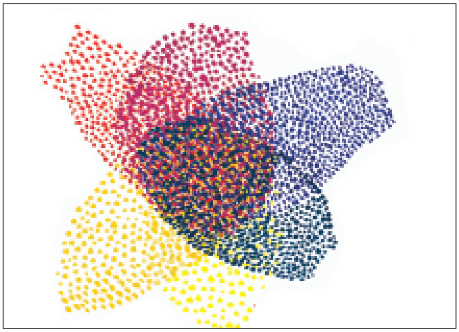


[29]

If we combine coloured dots with white, black or grey ones, brightness and saturation are affected in the same way as in ordinary mixing (ill. 29).

Even without black dark grey colours can be suggested through pointillism, although the result will never be as dark and unsaturated as in complete mixing (ill. 30).



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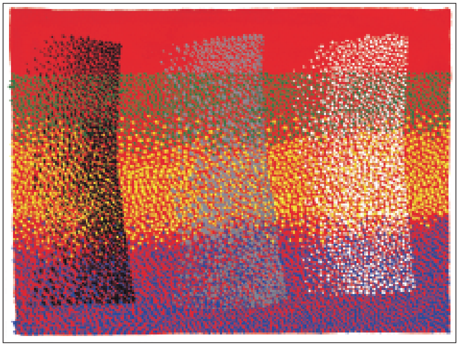
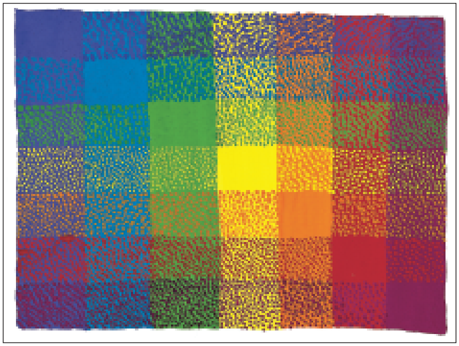


[31]

In the preceding pointillistic illustrations the white of the paper also forms part of the optical mixture. This makes the colours brighter and less saturated. In the following example different colours have been applied to a ground which has been painted a uniform colour, so that greater saturation is achieved (ill. 31).

In the second example vertical strips from left to right have been painted in uniform colours. The same colours have been applied pointillistically in the same order in horizontal strips (ill. 32).



[32]

Glazing mixing

In painting ***glazing*** means the application of transparent layers of paint. A transparent blue applied over yellow mixes optically to green. Transparent red over yellow mixes optically to orange. Transparent blue over red mixes optically to violet. If we apply three colours on top of each other they cancel each other out and mix optically to produce an unsaturated grey colour (ill. 33). The best results are achieved with glazing mixing when increasingly dark colours are applied over each other.

*[**33**]*

This technique cannot be used with poster colour, since poster paint is opaque. With all other types of paint the rule is that only colours based on (semi-)transparent pigments are suitable for this technique (see under pigments).

Painting with colour

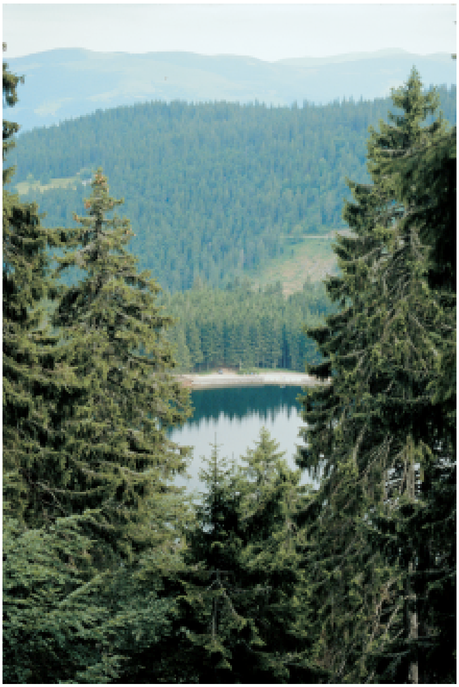
Suggesting space on a flat surface

The ground on which we paint is flat. Nevertheless depth can be suggested in paintings. This suggestion can be created, for example, by a correct use of colour temperature, brightness and saturation.

Analysis of a landscape

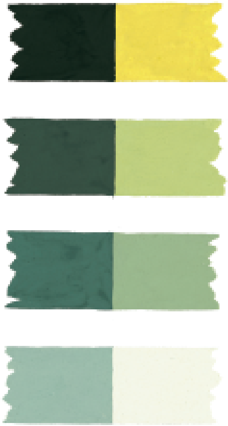
We are looking out over a mountain landscape full of trees (ill. 34).
Despite the fact that the photograph is a 'flat picture' the impression is that we can see infinitely far into the distance. From foreground to background the landscape can be roughly divided into four stages:

1. The trees in the foreground
2. The trees on the far side of the water
3. The mountain with trees behind it
4. The mountains in the distance.



Formal perspective and colour perspective

Suggestion of space is created in the first place by the fact that shapes which in reality are the same size appear smaller and smaller 'the further away from us they are'. The trees in the foreground are almost as big as the photograph, while the trees on the other side of the lake are depicted many times smaller. The trees on the mountain are even smaller and on the mountains beyond no trees at all can be distinguished. Only the dark patches suggest that there are trees there too. Yet we know that in reality the trees do not get smaller and smaller.



[35]

If we next look at the colours in each of those four stages, we also see great differences. Exactly what happens to the colours becomes clear if we copy a dark and a light colour for each stage approximately using paint (ill. 35).

In the foreground the greens are warm. They contain a lot of yellow, and even orange. The further away the trees are the bluer they become. ***The colour temperature falls as the distance from a colour increases. The colour becomes cooler.***

In the foreground the contrast in brightness is great. The further away we move, the smaller the distance between light and dark becomes. ***A dark colour becomes increasingly light as the distance from the colour increases.***

Colour saturation follows a comparable pattern. The further away, the greyer the colours. ***The saturation of a colour decreases as the distance from the colour increases.*** Form perspective and colour perspective are inextricably bound together.

Colour temperature and the suggestion of space

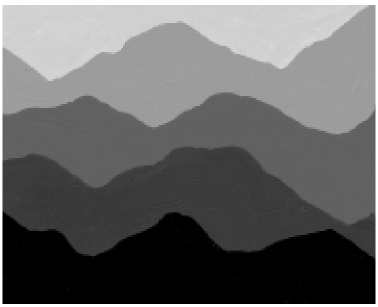
Warm colours stand out compared with cool colours (ill. 36). By reversing the use of colour in two illustrations with the same shapes, the effect of the various colours on the suggestion of space is clearly shown.

[36]

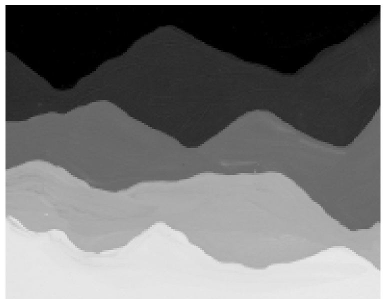
In the landscape on the left our attention is drawn by the warm-coloured mountains in the foreground. From there our eye is led into the space. In the right-hand illustration our attention is immediately drawn by the warm-coloured mountains in the background. If we then look downwards the blue mountains in the foreground seem to be trying to hide under the warm colours. They do not stand out.

Brightness and suggesting space

Objects which are contrasted with a lighter background stand out (ill. 37). In the first example we have no difficulty in imagining a spatial mountain landscape. In the second example this is much more difficult. The world seems to be standing on its head. Objects which have great contrasts in brightness stand out compared to objects with small contrasts in brightness (ill. 38).



[37]

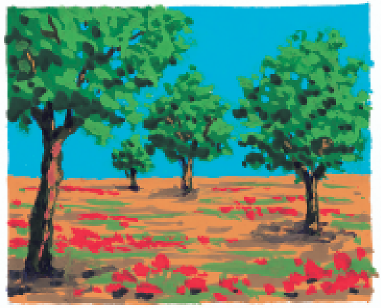


In the first illustration space is suggested by the marked form perspective of the posts (ill. 38).
This space is emphasized in the second example by increasing the contrast between light and dark in the foreground and decreasing it in the background.

[38]

Saturation and suggesting space

Saturated colours stand out in relation to unsaturated colours (ill. 39). In the first illustration we experience depth because the shapes become smaller and smaller. By then decreasing the saturation from foreground to background the suggestion of space is heightened.

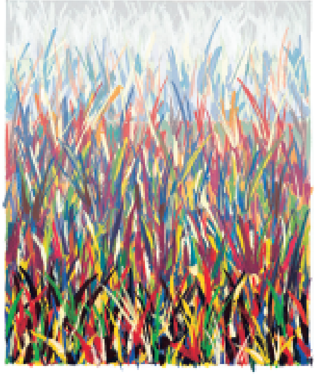


[39]

Suggesting space through a combination of colour properties

In painting from life space is suggested, as well as through form perspective, through a ***combination*** of colour temperature, brightness and saturation. Of course the artist has the freedom to keep to reality, depart from it, or to paint from his imagination. He can opt to emphasize the suggestion of space or precisely avoid it. In all cases the required result can only be achieved by a correct use of colour properties. Using the following examples various options are described.

Ill. 40
In this illustration form perspective is totally absent: the grass-like shapes are as large in the foreground as in the background. Depth is created solely by combining the possibilities of the properties of colours. At the bottom saturated and warm colours have been used and the contrast in

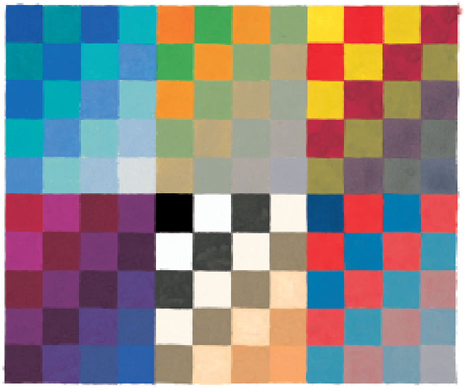


[40]

brightness is great. Towards the top of the picture saturation and contrast in brightness gradually decrease, and the colours become predominantly cool. At the very top the shapes disappear in a light grey colour.

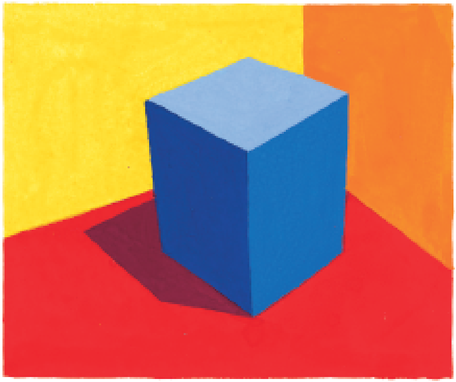
Ill. 41

In each of the six rectangles the top left-hand corner stands out and the bottom right-hand corner recedes. This is because of the diagonal progression of colours: at top left saturation, colour temperature and/or contrast in brightness are strongly present, at bottom right much less so. Where the rectangles border each other mutually comparable differences can be seen through which the suggestion of space is emphasized.



[41]

In the following examples the suggestion of space is linked to form perspective through combination of colour properties.



Ill. 42

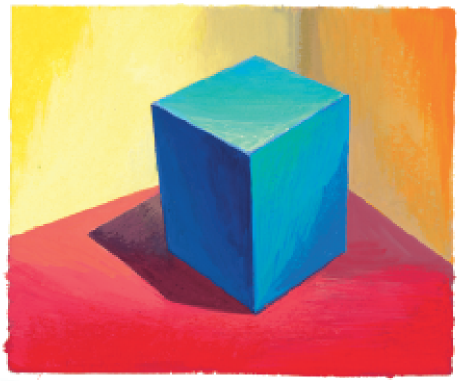
The surroundings of the blue block are very saturated and in addition are made up of warm colours. Despite the saturation of the blue itself and the contrast in brightness between the blue areas the block appears to be trying to disappear into the background; we do not experience any space behind the shape.

[42]

Ill. 43

The saturation of the foreground and background is increasingly reduced from front to back. The corner behind the subject is furthest away and hence the most unsaturated. At the same time the angle at which the light falls has also be taken into account. The light comes from top right and apart from on the subject, falls mainly on the area to the left of it. This causes a greater contrast in brightness between the cast shadow and the ground. The cast shadow is the link between form and the ground. The use of the properties of colours helps to determine the space for the object casting the shadow. The colour of the cast shadow has been made slightly lighter and unsaturated towards the back so that the shadow follows the spatial progression of the ground.

The saturation of the blue areas has been reduced somewhat towards the back and the colour of the lighter areas at the front has been made more yellow, and the blue of the dark area at the front darker. The foremost point now has a great contrast in brightness and more warmth, and hence stands out more. The block itself is now more spatial and stands out from the background.



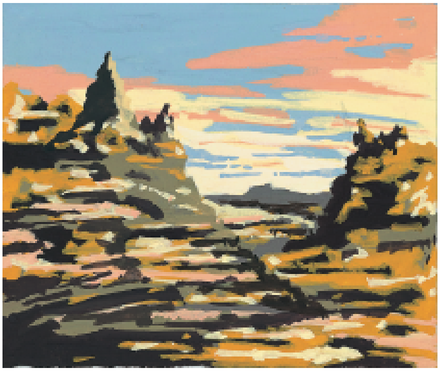
[43]

Ill. 44

The suggestion of space through properties of colours always works. If the properties are used in a way that runs precisely counter to form perspective every spatial drawing can be turned into a representation without the suggestion of space.

In the illustration all the steps described above have been used in reverse.

[44]



Ill. 45

The landscape can be divided into four parts: the mountain on the left, the mountain on the right, the view through to the landscape beyond and the sky. The representation is not very spatial. Both the colour temperature and the saturation and the contrast in brightness are more or less the same everywhere. Only the sky recedes because of the low contrast in brightness.

[**45**]

Ill. 46

The mountain in the foreground stands out more because of the warm saturated colours. The mountain on the right now seems further away, the dark colours have been made lighter and the lightest colours somewhat darker. The contrast in brightness compared with the foreground is now considerably less. The shadows at the foot of the mountain have been painted in with cooler colours so that the valley seems deeper and distance from the foreground greater. In the view through the mountains the dark colours have been made lighter and cooler so that space is emphasized.

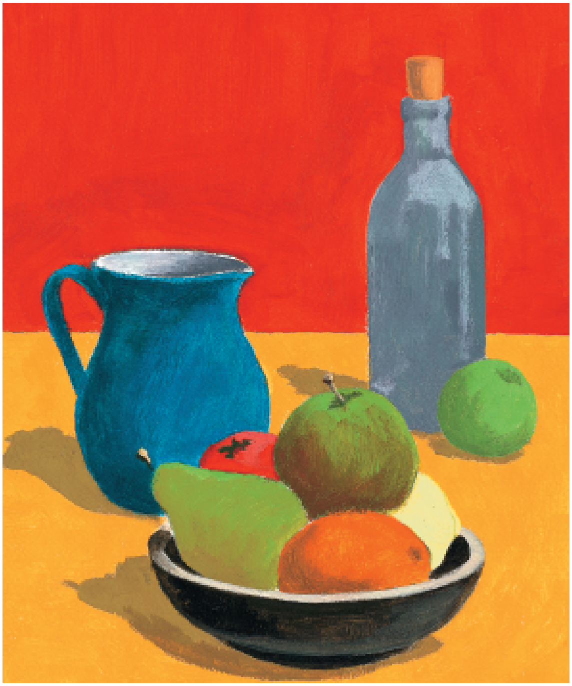
[**46**]

We can see changes in the sky too. Before we deal with these let us reflect for a moment on how a sky should be seen in spatial terms. Skies are unpredictable. Depending on the weather conditions and the time of day dark and light sections may alternate and saturated, warm or cool colours can appear anywhere. Nevertheless the laws of the properties of colours in relation to the suggestion of space apply here too. No sky is so red that a dark shape will not stand out against it. We should see the sky like the ceiling of a room. If we look straight up the distance to the ceiling is small. If we look further away at the ceiling the distance is greater. In other words if we look straight up at a clear blue sky the blue is dark and saturated. The further towards the horizon we focus our gaze, the lighter and more unsaturated the blue will be. The contrast in brightness in clouds immediately above us as a result of the effect of light and shadow will consequently be greater than the contrast of similar clouds further away. Accordingly in the illustration we see the contrast in brightness, saturation and the colour temperature of the sky reducing towards the horizon.

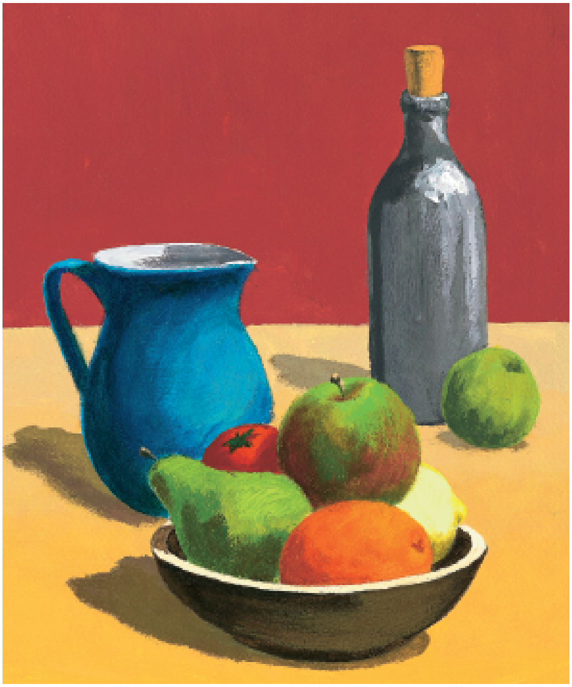
In the last examples the colours in a still-life are constructed step by step in such a way that each object is given its place in space. We do this in three stages.

Ill. 47

The painting lacks any suggestion of space. The red background dominates all other forms and the ground seems to be upright. The colourless grey bottle disappears into the background and the green fruit cannot compete with the riot of colour around them.



[47]



[48]

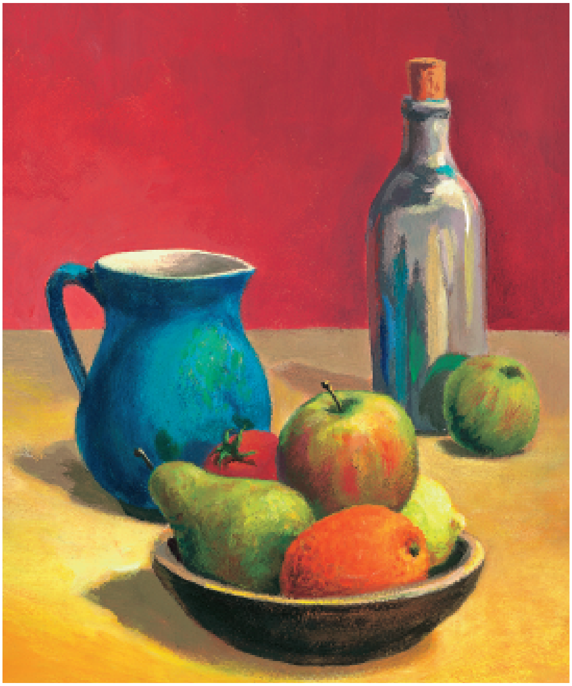
Ill. 48

The saturation of the background has been toned down, as has the saturation of the yellow ground towards the back. This defines the space in which the various objects must be located. The colours of the cast shadows follow this saturation progression and in addition have been made a little lighter towards the back. Next, use has been made of the angle at which the light falls to give the shapes contrast in brightness. It is important that the subjects should retain sufficient colour.

It is not sufficient to make a colour lighter or darker with white or black respectively. The brightness will change, but so will the saturation. Unsaturated colours will recede in relation to the starting colour and will cancel out the spatial location of the object.
Depending on the colour of the light and the colours of the surroundings the shadow colours and the light colours of an object become cooler or warmer as well as darker or lighter. The dark dish is given more colour by repeating the yellow of the ground on the outside. Depending on the material of which the objects are made colours can be reflected back and forth in varying degrees.

Ill. 49

The red ground has been made somewhat cooler and darker on the right, towards the bottom left-hand corner somewhat lighter and more unsaturated. As a result the grey bottle and the blue jug particularly stand out more. The bottle has become considerably more colourful by echoing various colours from the surroundings on it. The lightest areas of each object have been reinforced with warm colours. Compare, for example, the little blue jug in the previous illustration with jug now. Thanks to the warm, light colours the jug itself has become more spatial and detaches itself more from the background. As a last step attention was paid to the small details in the foreground.



[49]

List of mixing colours in Talens paints

The primary colours of the three-colour mixing system and the additional colours from the six-colour mixing system may have different names and colour codes according to type of paint. Below is a table of the principal mixed colours in various types of paint.

Product	Primary colours	Additional colours
Oil colours		
Rembrandt	254 (207), 366, 576	283 (208), 311 (303), 506
Van Gogh	267, 366, 570	268 (208), 311 (393), 504
Amsterdam	267, 366, 570	268, 312, 504
Cobra	275, 369, 572	254 (207), 311 (303), 504
ArtCreation	205, 357, 570	200, 311, 504
Acrylic colours		
Rembrandt	267 (207), 366, 570	268 (208), 398 (303), 504
Van Gogh	267, 366, 570	268, 311, 504
Amsterdam Expert Series	254 (207), 366, 570	284 (208), 311 (303), 504
Amsterdam Standard Series	275, 369, 572	267, 396, 504
ArtCreation	275, 369, 572	267, 398, 504
Water colours		
Rembrandt	254 (207), 366, 576	268 (208), 311 (303), 506
Van Gogh	254, 366, 570	268, 311, 506
Poster colours		
Designers' gouache	205, 397, 501	200, 311, 506
Ecola	205, 359, 501	200, 334, 502
School colours	200, 302, 501	
ArtCreation	205, 362, 501	201, 311, 504

Product	Primary colours	Additional colours
Ecoline	205, 337, 578	201, 311, 506
Decorfin		
Universal satin	287, 350, 588	
Textile	206, 350, 527	
Glass	200, 350, 501	
Porcelain	287/288, 341, 527/541	

Colour numbers mentioned between ( ) are colours based on real cadmium pigments.

Index

Subject | Page

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