Watercolour Painting

Jean-Louis Morelle

A Complete Guide to Techniques and Materials
First published in the UK in 2003 by
New Holland Publishers (UK) Ltd
London • Cape Town • Sydney • Auckland

Garfield House
86–88 Edgware Road
London W2 2EA
United Kingdom
www.newhollandpublishers.com

80 McKenzie Street
Cape Town 8001, South Africa

Level 1, Unit 4, 14 Aquatic Drive
Frenchs Forest, NSW 2086, Australia

218 Lake Road
Northcote, Auckland, New Zealand

Copyright © Groupe Fleursus-Mame, Paris, 1999
Copyright © colour triangle, Jean-Louis Morelle, 1999

All rights reserved. No part of this publication may be reproduced,
stored in a retrieval system, or transmitted in any form or by any means,
electronic, mechanical, photocopying, recording or otherwise, without
the prior written permission of the publishers and copyright holders.

ISBN 1 84330 521 6

Publishing Manager: Christophe Savouré
Artistic Manager: Danielle Capellazzi
Graphic design and layout: Claude Poirier
Editor: Guillaume Po
Producer: Florence Bellot
Computer graphics: Laurent Blondel
English translation: Bernie Wright

10 9 8 7 6 5 4 3 2 1

Printed and bound in Malaysia by Times Offset (M) Sdn Bhd

The author would like to thank Françoise Coiffant and Élisabeth
de Montmarin who encouraged him to write this book; Ewa Karpinska,
particularly for her productive conversations on the problems relating to
colour; Gérard Leserre and Philippe Mote for their friendship and faith;
the Aitouares and Vanuxem galleries; the photographers P. Lesage and
J.-F Schall; and all the painters and those who love watercolours who
contributed to this work: Lélie Abadie, Wolf Arrich, Pierre Bergonhe,
Annick Berteaux, Marc-Fabien Bonnard, Claude Boquin, Georges
Cocia, Gérard Louis-Dreyfus, Daniel Estrade, Bernard Gobet, Gottfried
Salzmann, Bernadette Tonnellier, Guy Veyssier and Mamina Yunoki.

The photographs with no reference to copyright are the author’s own.
Watercolour Painting

Jean-Louis Morelle

NEW HOLLAND
Contents

Foreword 7

The world of colour 8

Colour classification 10
- Isaac Newton’s classification 10
- Classification using three colours: blue, green and red 11
- The last classification: cyan, yellow and magenta 11
- The object as the precursor of colour 12
- Application to painting 12
- The base colours 13
- An explanation of the terminology 14
- The ideal and reality 14
- Trichromatic printing of the 18th century 16

Shadows 18
- The colour of shadows 18
- Painting outdoors 19
- When shadows became blue 19
- An expanded palette 19
- Complementary colours 20
- The discoveries of Chevreul 21
- What is an optical mix? 22

The colour triangle 24
- Arranging colours 24
- Darkening colours 25
- The choice of triangle 26
- Theoretical colours and commercially produced colours 26
- Renoir’s and Monet’s palettes 27
- Forming a palette 28
- Complementary colours 28
- Strong shadows 29
- Three sample palettes 30
- Trichromatic greys 31
- How to define a colour 32
- Using the colour triangle effectively 34
- The 31-colour triangle, or educating the eye to the three-colour process 35
- The colour table 36
- Building on experience 37
- Conclusion 37

Shadows 18
- The colour of shadows 18
- Painting outdoors 19
- When shadows became blue 19
- An expanded palette 19
- Complementary colours 20
- The discoveries of Chevreul 21
- What is an optical mix? 22
<table>
<thead>
<tr>
<th>Techniques</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wet-on-wet technique</td>
<td>40</td>
</tr>
<tr>
<td>* Choice of brush</td>
<td>41</td>
</tr>
<tr>
<td>* Preparing the paper</td>
<td>41</td>
</tr>
<tr>
<td>* The key moment</td>
<td>44</td>
</tr>
<tr>
<td>* The surface of the paper</td>
<td>45</td>
</tr>
<tr>
<td>* Colour density</td>
<td>46</td>
</tr>
<tr>
<td>* How to control the halo effect</td>
<td>48</td>
</tr>
<tr>
<td>* Reproducing the halo effect</td>
<td>51</td>
</tr>
<tr>
<td>* Strokes and brushes</td>
<td>52</td>
</tr>
<tr>
<td>* Painting with pure water</td>
<td>54</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Techniques using dry surfaces</th>
<th>56</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Some recommendations</td>
<td>56</td>
</tr>
<tr>
<td>* In contact with the senses</td>
<td>58</td>
</tr>
<tr>
<td>* Achieving fluidity</td>
<td>61</td>
</tr>
<tr>
<td>* The second brush</td>
<td>62</td>
</tr>
<tr>
<td>* Studying the subject</td>
<td>64</td>
</tr>
<tr>
<td>* The blurred edge</td>
<td>64</td>
</tr>
<tr>
<td>* The invisible halo</td>
<td>66</td>
</tr>
<tr>
<td>* Depigmented brushwork</td>
<td>66</td>
</tr>
<tr>
<td>* Denser brushstrokes</td>
<td>68</td>
</tr>
<tr>
<td>* Edge darkening</td>
<td>68</td>
</tr>
<tr>
<td>* How to test your paper</td>
<td>71</td>
</tr>
<tr>
<td>* Style and approach</td>
<td>73</td>
</tr>
<tr>
<td>* Where to start</td>
<td>74</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gallery</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Gottfried Salzmann, New York, Towards the North</td>
<td>77</td>
</tr>
<tr>
<td>* Daniel Estrade, Reliquary for Exchange Currency, Spirit Mortar</td>
<td>78</td>
</tr>
<tr>
<td>* Ewa Karpinska, Quinces on Red Cloth</td>
<td>79</td>
</tr>
<tr>
<td>* Gérard Leserre, Morning by the Pond</td>
<td>80</td>
</tr>
<tr>
<td>* Annick Berteaux, Cape Coz</td>
<td>81</td>
</tr>
<tr>
<td>* Pierre Bergonhe, Saint-Martin Canal</td>
<td>82</td>
</tr>
<tr>
<td>* Philippe Mothe, Road Signs</td>
<td>83</td>
</tr>
<tr>
<td>* Lélie Abadie, Red Knot</td>
<td>84</td>
</tr>
<tr>
<td>* Jean-Louis Morelle, Nape of a Woman</td>
<td>85</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step by step</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Cans from the Studio, Philippe Mothe</td>
<td>88</td>
</tr>
<tr>
<td>* The Green Door, Gérard Leserre</td>
<td>92</td>
</tr>
<tr>
<td>* Boats on a Pond, Gérard Leserre</td>
<td>96</td>
</tr>
<tr>
<td>* Peaceful Street, Philippe Mothe</td>
<td>100</td>
</tr>
<tr>
<td>* Butterfly Nude, Jean-Louis Morelle</td>
<td>104</td>
</tr>
<tr>
<td>* Young Girl Sleeping, Jean-Louis Morelle</td>
<td>108</td>
</tr>
<tr>
<td>* Rosehips, Ewa Karpinska</td>
<td>112</td>
</tr>
<tr>
<td>* The Lost Rosebush, Ewa Karpinska</td>
<td>116</td>
</tr>
<tr>
<td>* Redcurrants, Ewa Karpinska</td>
<td>120</td>
</tr>
<tr>
<td>* Poppies, Ewa Karpinska</td>
<td>124</td>
</tr>
</tbody>
</table>
Jean-Louis Morelle, *The Unmade Bed*

The sensuality of water and cloth fuse ... The morning light on the whiteness of the sheets is captured by using the correct shading - not too pale and not too dark.
To my father

Throughout the years that I have practised watercolour painting, one thing has become clear: before it becomes paint, watercolour is first and foremost water. Water fills us with fear and pleasure in equal measures, thus making us aware of the rich and ambivalent relationship that we have always had with this element. The child who is afraid of the power of a wave may also be filled with wonder at the patterns drawn on his bathtub by bath salts – his first contact with pigments and, without doubt, his first emotion evoked by a painting in water. I have seen these feelings re-emerge in many amateur painters – nobody is truly free of them. This gave me the idea to develop a method of teaching based on in-depth observation of the phenomena that water creates. Very simple conclusions are born from such observation. We very quickly notice that we have no control over water and that we cannot force it to do anything. We must respect it. Firstly it spreads, next it is absorbed and then it dries after a period of time.

The main purpose of this book is therefore to encourage you to develop your own observations of water, and in particular to find a way of relating to water. You will learn how water behaves, but you will also become aware of your own interaction with this element. Combining theory and practice, the aim is to develop a relationship with the medium through first learning to handle water and then learning how to love it.

JEAN-LOUIS MORELLE
Colours are mixed first of all on the palette and then on the painting. The two acts are totally separate.

The objective of this chapter is not to theorise on the hypothetical laws of harmony, which are at the mercy of current trends, but to help you to achieve the colour tone that you desire on your palette. Bonnard pinned his canvases to his bedroom walls for months to achieve a lasting and penetrating impression, such was the value that he attached to the perfection of composition and harmony in his paintings.

What is available nowadays to study colour? The modern age has gained control of the reproduction of colours through printing, photography and television. These advances have been generated by exceptional individuals and the history of scientific and technical discovery is a mine of information for each of us.

When dealing with art, intuition is best, but knowledge of physical phenomena enables us to work in a more reasoned fashion. Be tempted to learn about colour. Find out how to gain control of your palette. And then, once you have discovered the advantages of this logical approach, empty your mind and let yourself paint.
of colour
The watercolour painter works with three elements: water, pigments and the light reflected by the paper. The way in which light works is of particular importance when using this method. This is why knowledge of physical phenomena can have a tremendous influence on your working methods. You need to be able to distinguish the fundamental colours of the additive system (light waves) from the primary colours of the subtractive system (pigments).

In nature, light waves of all kinds are mixed together at random. If we observe the line of the rays refracted by a prism, we will see a continuous strip of colours. We pass imperceptibly from dark blue (short waves) to green (middle waves), then from green to red (long waves). There are also less obvious bands of colour: light blue between dark blue and green, and light yellow between green and red. These waves are actually colourless: it is our brain, linked to our eye, that converts them into colours. This conversion may differ from one animal species to another. The bee, for example, sees ultraviolet rays that we cannot pick out while cats and dogs find it difficult to see reds.

In 1669 the English physicist Isaac Newton (1642-1727) suggested breaking down the colour spectrum into seven colours: violet, indigo, blue, green, yellow, orange and red. He also demonstrated the reversibility of this phenomenon: by recreating the full range of all of these
colours with the help of a second prism, he was able to reproduce white light. Newton thus established the universal theory, which states that all colours are contained in white light. This is known as ‘additive’ synthesis. Black, on the other hand, does not physically exist. It is simply the absence of all emitted or reflected radiance.

**Classification using three colours: blue, green and red**

A century later, the British biologist and doctor Thomas Young (1773–1829) hypothesized that the cells of the retina are sensitive to three fundamental colours: blue, green and red. In 1852 the German doctor and physiologist Hermann Von Helmholtz (1821–1894) reiterated the classification and hypothesis put forward by Young, which was later to be confirmed by modern biology.

Three years later in 1855, the Scottish physicist James Clark Maxwell (1831–1879) demonstrated that all shades of colours that exist in nature can be obtained through additive synthesis from blue, green and red mixed in variable proportions of coloured lights. Modern technologies that require the use of filters often draw on this classification. They are based on the fact that blue, green and red each occupy approximately one third of the spectrum and that when used together they recreate the spectrum almost completely. The filters used in photographic equipment and scanners allow the light waves of one third of the spectrum to pass through but block the other two thirds.

What happens, however, in the gaps between these three fundamental colours?

**The last classification: cyan, yellow and magenta**

If we carefully observe the colour spectrum as it passes from blue to green, we can make out a thin band of pure, light blue between the two areas. This blue, later described as ‘cyan’, is not easy to discern. The same applies to the yellow, known as ‘primary’. This is an equally thin band between the green and the red. Primary red, named ‘magenta’, can only be seen by using two prisms. If we combine the refraction of these two prisms, placed very close to one another, and make the red bands of one coincide with the blue bands of the other, partially superimposing the bands on to one another, magenta red will appear.

The existence of these three primary colours can be proved by a simple experiment. Three projectors of neutral light and three filters for blue, green and red are needed. If we place a filter of each colour in front of each of the projectors, the beams combined will reconstitute white light. The intensity of each of the light sources does, however, need to be measured accurately as the precise quantity
of blue, green and red rays on the screen varies.

What happens if we mix these light rays in pairs? Our eye synthesizes the mixture of waves from the blue and green filters, producing a clear cyan-blue. In a similar way, additive synthesis of green and red results in primary yellow. Lastly, when the red filter is combined with the blue filter magenta red appears in the form of fuchsia pink.

Initially these results appear absurd. How can we actually imagine that a mixture of blue and green could lead to pure blue, when every child in the first year of primary school finds out that this combination results in a dark grey-green? In actual fact, depending on whether we are working within the world of waves or the material world of pigments, the results will differ considerably.

The object as the precursor of colour

Colour is dependent on the way in which the molecules of a body react with light. A body always diffuses fewer luminous rays than it collects: matter actually absorbs a proportion of these rays and reflects the rest. If a substance reflects all of the rays in the spectrum its surface appears white; if it absorbs nearly all of them it seems black. The molecules of a red pigment reflect red waves and absorb blue and green waves. The molecules of an ultramarine blue pigment reflect most of the short waves (blue), a small amount of the long waves (red) and very few of the middle waves (green). This is why subtractive synthesis is known as the phenomenon that is key to the creation of the colours in the world that surrounds us. It clearly has an enormous influence on the mixtures that the painter makes on his palette.

Application to painting

If we mix two pigments we are actually combining two phenomena as this process reduces the intensity of radiance and synthesizes two subtractions. These phenomena have a major impact on the work of the watercolour painter, as the more the colours are mixed, the higher the incidence of absorption and the more luminosity decreases. Take care to examine the manufacturer's chart for prepared colours which can be found in art shops, as some shades have been made with several pigments. It is thus possible, without knowing, to synthesise a number of different subtractions in our mixes and to lose a great deal of luminosity. As a result, it is not only important to take care with the opacity or transparency of the colours that you are using, but also with their composition. Do not be afraid to ask your retailer for leaflets on each brand with the composition of each colour.
The base colours

The pigments you use should give you complete freedom to recreate all of the shades that you observe or imagine. Before beginning work, you will probably be unaware of the number of tones, that will appear in your painting and as a result will need to be able to create all possible mixes.

The more complex the compound of a particular colour tone, the more it will absorb light intensity, and the smaller the area of the spectrum that will be reflected. On the other hand, the greater the ability of these base pigments to reflect a wide area of the spectrum, the more the painter is able to accurately measure out the different subtractions. To retain complete freedom of action, the artist must therefore set up his palette with pigments that are:

- chemically pure (they have not been created through mixing);
- light and luminous;
- highly reflective in all three areas of the colour spectrum.

Other pigments will only be used in a supplementary capacity (see Renoir’s suggestions on his own palette, page 27).

With subtractive synthesis, only the colours close to cyan-blue, primary yellow and magenta-red possess these qualities and enable all shades to be recreated. This is why these three primary colours are used in printing. In fact, when the pigment closest to cyan-blue is

analyzed in the colorimeter, it can be observed that it mainly reflects blue and green waves. The primary yellow pigment reflects a large proportion of the green and red waves, whilst the magenta-red pigment will reflect some of the red waves and a small amount of the blue waves.

Why, for example, do cyan-blue and primary yellow result in green? We’ve looked at the reflective properties of these two pigments, and now let’s examine their absorption. Cyan-blue paint absorbs waves of the greatest length (red). If a yellow, which absorbs the shortest waves (blue), is mixed with this blue, only the middle waves (green) will be reflected. If we add a red pigment to this green, it will absorb the green. This will demonstrate a synthesis of three subtractions and the end result will thus approximate to black1.

---

1. Refer to Moritz Zwimpfer, Couleur optique et perception, Paris, Dessain et Toira, 1992
An explanation of the terminology
To adapt to the world around us, the brain, connected to the eye, converts the combinations of the diversely reflected rays into colours. We can attempt to explain colour mixing logically (as we will do at the end of the chapter through the colour triangle), and the logic used will be subordinate to the workings of the subtractive system. This will even have an impact on our use of terminology.

We actually call the first of the fundamental colours of the spectrum ‘blue’. However, we also call the ‘cyan’ blue that our eyes perceive from the mixture of blue and green coloured lights ‘blue’. These two kinds of blue are not of the same nature. Similarly, ‘magenta’ red is not the red of the spectrum. Only primary yellow is uncomplicated as it can easily be distinguished from green.

Many works, when touching on colour synthesis, do not specify the red or blue to which they are referring. It is, however, essential to highlight the difference between additive synthesis (light waves) and subtractive synthesis (pigments). In my writing I make use of the qualifier ‘fundamental’ when referring to light waves (in other works they are called ‘primitive’) and ‘primary’ when referring to pigments.

The task of the painter, who can be likened to an alchemist capable of any mix, becomes increasingly complicated. If you wish to use a colour tone that approximates to ‘fundamental’ blue, you may find a corresponding blue pigment, or create it by mixing. If you add a small amount of primary ‘magenta’ red to primary ‘cyan’ blue, you will end up with a colour tone that is close to fundamental blue.

Is fundamental blue a violet-blue? From a strictly physical point of view the answer is no. That would amount to saying that this fundamental blue is a mixture of two waves, which is not the case. But from the practical perspective of mixing colours according to the subtractive system, our eye and brain convert this fundamental blue into a slightly violet colour compared to primary cyan-blue.

This is why, throughout the book, references to two fundamental colours (blue and red) may be followed in brackets by the way in which they would be composed in the subtractive system (violet-blue and orange-red). In accordance with the latter system, primary red–magenta should actually be mixed with a little primary yellow to gain an approximation of fundamental red. Fortunately green doesn’t cause any confusion.

The ideal and reality
No pigment could be defined as a ‘pure’ colour. If this were the case, painters could compose their pictures out of beams of light – a fine poetic image ... The artist can, however, attempt to find pigments that approximate to the three primary colours as seen by the naked eye. By mixing them, you combine the most varied subtractions: blue with a hint of red becomes violet, and this violet can be broken by a minute touch of yellow. When yellow is added to red it becomes orange–red and this orange–red can in turn be mixed with blue, which will result in brown, etc.

This alchemy marks the start of the journey of an artistic creation ...

This is how we explain the difference between the world of waves, with its three fundamental colours that are mixed to create white light, and the material world with its three primary colours that result in black through subtraction of the different waves.

Many arguments relating to the understanding of colours stem from the confusion between these two different systems.
Trichromatic printing of the 18th century

In 1996 the National Library of France organized an exhibition called 'The Anatomy of Colour' in Paris. On display were copper-plate engravings from the beginning of the 18th century, in particular anatomical plates printed in the three base colours. These colours were different from those used in contemporary printing, but did resemble them: the blue could be compared to Prussian blue, the red was similar to a slightly fiery crimson and the yellow was not very different from yellow ochre. However, a most important step had been taken. Prints of three plates superimposed with three low-density colours enabled the artist to recreate the shades of nature almost perfectly. What transpired from this work resembled the wealth of tones present in oil painting.

A German researcher, Jacob Christoph Le Blon (1667–1741), was responsible for these magnificent engravings. Both a scientist and a painter, he was experienced in the use of pigments and working with physical matter. His research began in 1706, two years after the publication of Optic by Newton. Le Blon very quickly discovered that the phenomenon of colour absorption could in fact be an asset in certain situations. He wrote: 'All visible objects can be depicted through painting with three colours, namely yellow, red and blue, as all other colours can be made up of these three, which I call primitive colours ... And a mixture of these three primitive colours produces black and all other colours ... Here I am only speaking of material colours, that is the colours used by painters, as the mixture of all of the impalpable primitive colours does not result in black, but exactly the opposite, that is to say white'. (The Harmony of Colouring in Painting, London, 1725.)

The refinement of Le Blon's engravings was a contributory factor in the success of his argument. However, to obtain deeper shading he had to apply very dense layers of ink to the three plates, which was very time-consuming and made the drying process difficult. He sensed that he could use a black plate to supplement his work.

One of Le Blon's pupils, Jacques-Fabien Gautier-Dagoty, took this step. As the head of a family business he scrupulously exploited the invention of his master and dominated the history of 18th century engraving in three colours, leaving us magnificent anatomical plates.

Good fortune had smiled on Le Blon's invention but numerous economic factors caused it to be neglected for the following hundred years. Printing in three colours, and later in four colours, required a high level of skill in a number of areas. Perhaps the technique made its appearance too soon, but Le Blon is worthy of our admiration as we are now building on the foundations that he put in place.

Shadows

If you were to go into space as an astronaut, the sky would be of the deepest darkness imaginable. Far beyond Earth, in a place where no stars shine, black becomes absolute. Our earthly atmosphere, filled with gas and steam molecules, hides the relentless black of the sidereal void. These very diverse molecules reflect light waves and diffuse them in all directions. Short waves, converted into blue, are much more spread out and are refracted more sharply than long waves, which are converted into red.

The colour of shadows
As mentioned at the beginning of this chapter, in physics black is not a colour but rather the absence of light. This is of major consequence to the artist, as colour is altered according to a decrease in white light. A hint of white light is enough to give a shadow a trace of the three colours, in unequal proportions, according to the reflective properties or absorbency of the elements involved. Shade therefore has its own colour and the ability to find it will be the most important test that the artist undergoes. A further consideration is that no shadow is devoid of reflection. Good painters can thus be set apart from the mediocre by their ability to determine the colour of a reflection in relation to the colour of a shade, which is itself also dependant on the local tone of the object and its environment. As a result, no colour can be studied in isolation. Whether it is plunged into darkness or not, it can only exist in relation to the other colours that surround it.
Painting outdoors

The disappearance of black, dull and tar-like shadows from academic painting was one of the artistic gambles of the 19th century. The battle was begun by Eugène Delacroix (1798–1863) and then waged by the painters of the Barbizon school, soon to be joined by the impressionists. They went out to fight armed with a new weapon, which seems the subtractive system. It is for this reason that the reds disappear first at nightfall. Blues remain visible for a longer time. Do not conclude from this that all shadows are blue. The local colour of the object, as well as all that it reflects from its surroundings, and the harmonisation that needs to take place with the tonal range of the picture have much influence on the composition of the shade.

An expanded palette

Everything had a code in academic art. The subject matter needed to be smooth, flesh was pearly, shadows were brown, and the last relics of classical myths were thought to promote elevation of souls. Blue was only used as the local colour of an object. The impressionists were actually the first to display the whole of the primary colour triangle on canvas. Within established art the major issues in painting revolved around the duality of light and dark, which completely ignored the relationship between complementaries. This relationship can only be grasped by resolving a series of problems, as a colour can only be matched with its complementary by mixing the other two. The use of the complementary was to be, with or without Chevreul, a favourite theme in all painting throughout the second half of the 19th century. Artists also tried out bolder contrastive use of warm and cold colours, and, following the example of Cézanne, played with the effect of depth, created by the juxtaposition of two colour tones. Modern art had realized once and for all that the space within the picture went beyond the illusion created by its unique geometric perspective.
Complementary colours in additive system.

Fundamental green (FG) mixed with fundamental red (FR) results in primary yellow (PV). Mixing this yellow with fundamental blue (FB) will result in white light (W). Primary yellow and fundamental blue are complementary to one another.

Fundamental red (FR) mixed with fundamental blue (FB) will result in magenta-red (M) which, when mixed with fundamental green (FG), will result in white light (W). Magenta-red and fundamental green are complementary to one another.

Fundamental blue (FB) mixed with fundamental green (FG) will result in cyan-blue (C) which, when mixed with fundamental red (FR), will result in white light (W). Cyan-blue and fundamental red are complementary to one another.

Complementary colours

Using the additive system (that is light waves), if we were to remove fundamental blue from the spectrum, its complementary would appear, the synthesis of the mixture of the red and green bands. We have seen that this synthesis produces primary yellow (see page 12). This then becomes the complementary of fundamental blue and vice versa.

If we were to remove green from the spectrum (similar to the mid-green in the subtractive system), the complementary would be magenta-red, which was itself obtained by additive synthesis of fundamental blue (violet-blue in the subtractive system) and fundamental red (orange-red in the subtractive system). The same applies for the red area (orange-red in the subtractive system), the complementary for which is cyan-blue, which is itself the result of additive synthesis of the fundamental blue and green bands.

In the additive system, if we mix the three fundamental colours two at a time we will produce the primaries cyan-blue, yellow and magenta-red. In the subtractive system the opposite occurs to create mid-green, orange-red and violet-blue, colours which are then termed as secondary. This does not change anything: there is always one colour, which is complementary, resulting from the mixture of the other two, and vice versa.
The discoveries of Chevreul

One man was more capable than any other of examining two or more colours together: Eugène Chevreul (1786–1889). A chemist by training, he was appointed director of the Gobelins Tapestry Works in 1826. Responsible for listing wool dyes, he discovered that our perception of a stable colour tone could vary as a result of the colours that are next to it. If we face an orange-red section of colour, our retina will form a narrow halo in light blue (its complementary colour), around the outer edges. Chevreul observed two types of contrast: contrast of colour (which relates to a slight change in shade) and contrast of brightness. He created theories on these phenomena in his 'Law of Simultaneous Contrast'. Charles Blanc, director of Les Beaux-Arts, then integrated his interpretation of Chevreul's ideas into a work entitled The Grammar of Painting and Engraving (1867). Most of the painters at the end of the 19th century knew this work and were greatly influenced by its teachings.

1. If you wish to become immersed in coloured atmospheres, do not focus your vision on to the objects themselves. Maintain vision of the whole entity and do not hurry. You must leave the retina time to feed on the stimuli that it is receiving. After a few seconds the contrasts of brightness (light/dark) and of colour will become more pronounced.

---

Complementary colours in the subtractive system.
- Cyan-blue (C) mixed with primary yellow (PY), results in mid-green (MG) which, when mixed with magenta-red (M) results in a dark colour close to black (B). Mid-green and magenta-red are complementary to one another.

- Primary yellow (PY) mixed with magenta-red (M) results in orange-red (OR) which, when mixed with cyan-blue, results in a dark colour. Cyan-blue and orange-red are complementary to one another.

- Cyan-blue (C) mixed with magenta-red (M) results in violet-blue (VB) which, when mixed with primary yellow results in a dark colour. Violet-blue and primary yellow are complementary to one another.
To quote Chevreul: “If we observe two sections of the same colour, one darker than the other, or two differently coloured but equally dark sections in juxtaposition ... the eye will perceive ... modifications, which will relate, in the first case, to colour intensity, and in the second to the optical composition of the juxtaposed colours. As these modifications make the sections that are observed at the same time appear more different from each other than they are in reality, I will give them the name of simultaneous contrast of colour”.

Generally speaking the only one of Chevreul’s theories to have been remembered by history is that on simultaneous contrast. Nevertheless, he also developed theories on value contrast and on harmony through proximity of colour. His work is just as relevant today as it ever was, particularly to those who experience difficulties in harmonizing their colours. What lessons can the watercolour painter learn from Chevreul’s theories? Once watercolours have dried their tones become dull (and this is to say nothing of the shadows!) it is thus within the painter’s interest to grasp the importance of the complementaries, both as a means of darkening colour tones without using black and as a way of livening up colours through juxtaposition. Thus, if a red is placed alongside an umber, what type of green would the latter contain? Would it be a yellow-green or blue-green? How much green would be present? Have you really perceived the true nature of the red that is being observed? Distance yourself from simplistic solutions and with the help of Chevreul and his followers learn to see what surrounds you more clearly.

What is an optical mix?

Whilst the retina heightens the intensity of large sections of colour in juxtaposition, this is not at all the case with very small areas. In fact the retina functions in a way that is the complete opposite of the preceding phenomenon, as it blurs the vision and no longer differentiates messages. It creates an optical mix. This is why a large number of small yellow dots intermingled with but not overlaying a large number of small blue dots will give the impression of green. The neo-impressionists at the end of the 19th century made use of both simultaneous contrast and optical mixing. Georges Seurat (1859-1891), who was inspired by the work of Chevreul and Charles Blanc, was the theorist behind pointillism or divisionism. The juxtaposition of small spots of colour enabled him to achieve the colours he desired without breaking the colour tones through mixing.

The mysteries behind the colours used in painting were thus only studied in depth at the end of the 19th century, that is to say very recently. It is a combination of the discoveries in physiology and those in physics, which has enabled us to deepen our understanding.

Focus on the left chromatic circle opposite for a few seconds in daylight. Then transfer your gaze to the white centre of the sheet, giving the retina time to adjust, and little by little, a yellow, pink and bluish brightness will appear. It is your brain that produces the complementaries of the colours violet-blue, yellow-green and orange-red that were initially perceived. Repeat the experiment with the right chromatic circle in cyan-blue, yellow and magenta. Once your gaze has shifted, an orange brightness (complementary of cyan), then mauve (complementary of yellow) and lastly green (complementary of magenta) will appear. This is what biologists call an after-image or post-image. Two complementary colours look more vivid when juxtaposed with one another than when placed against a neutral background. Once again, it is our brain that is responsible for this phenomenon, as it accentuates the differences and thus enables us to gain a sharper perception of the elements that form our environment.

A Successive contrast effect.
Study these discs for 10
seconds before focusing on
the white part of the paper.

When placed on a white background the
magenta square appears darker than when
placed on a green background.

The crimson background is darker than
the green background. The Yellow Ochre
thus appears lighter on red than on green
(contrast of brightness). On the other hand,
it appears more vivid (simultaneous
contrast of colour) with the green.
The colour triangle

Each of the 31 numbers on the triangle corresponds to a colour.

The 31 colour triangle: a visual calibration and reference tool.

Triangle with 12 colours: 3 primaries (1, 2 and 3), 3 secondaries and complementaries (4, 5 and 6) and 6 tertiary compounds (7, 8, 9, 10, 11 and 12).

Arranging colours

Many geometric figures have been used to chart the main colours, including triangles, hexagons, circles and spheres. The objective of this chapter is to use a unique triangular palette, to help you to instinctively develop your knowledge of mixtures.

In the making of this book, which was manufactured using modern photo engraving processes, we consulted the subtractive primaries set out by the colour chart in the printing workshop. This will form the basis of our discussion. Arranging the colours in the form of a triangle seemed to be the simplest option, as this actually enables us to create a clear visual hierarchy between the three primaries and their complementaries. It also compels the painter to keep one limited base palette, which is easy to use. Tonal richness can thus only arise from mixing.

The three subtractive primaries are placed at each vertex of the triangle: cyan-blue (1), primary yellow (2) and magenta-red (3).

Each side of the triangle will become the area where mixtures of the two primaries at the vertices will take place. The middle of these sides will represent the point of equilibrium for any mix of two primary colours. It is also the position of the complementary of the colour situated at the other end of each median.

Let us take the blue (1) – yellow (2) side as an example. Equal quantities of blue and yellow are placed at the midpoint of this side, achieving an evenly balanced mid-green (4), complementary of magenta red (3). Between this evenly balanced circle of colour and the primary colour we have three quarters of this same primary and one quarter of the primary at the other end of the side (7 and 8). A theoretical black circle is placed at the centre of this triangle (31), which equates to overlaying the three primary colours. This process is a really effective tool that can be used to darken colours.
Darkening colours
The blue median shows how blue is darkened, moving from the lightest (at the vertex of the triangle) to the darkest (next to the centre). The same procedure is followed for yellow and red. This has not been achieved by adding black, but by adding the complementary of the colour in question to the mix (see section on strong shadows, page 29).
- The blue will be darkened by yellow and red (13, 14 and 15), thus by an orange-red;
- The yellow will be darkened by blue and red (16, 17 and 18), thus by a violet;
- The red will be darkened by yellow and blue (19, 20 and 21), thus by a green.

The next step is to add within the triangle:
- A shaded circle on the median for each complementary colour: green (22), orange-red (23) and violet (24);
- A shaded circle away from the median for intermediate compound colours in positions 25, 26, 27, 28, 29 and 30.

The end result will be the full printed triangle on page 24. It comprises thirty-one colours. The proportions of the three primaries that make up the colours can be found on page 34. All three colours are displayed in order to provide you with an immediate and clear visual aid of the process for developing mixes.
The choice of triangle

The model triangle will enable you to memorize primary colours and their mixes. It will also help you to develop your own optical sensitivity. It is one of the most practical tools available when tackling the secrets behind the optical composition of colours. By selecting three watercolours that approximate to the primaries (see page 36), you can mix them with one another, using the diagram with the different proportions (page 34) to help you. You will thus be able to match the tones of the coloured circles.

You will probably need to set aside two hours work to recreate this model triangle. Keep it to test future mixes.

When mixing colours the artist needs to satisfy three requirements:

- Your eye needs to be able to detect the different properties of two very similar colour tones;
- Your touch must remain light;
- You must accept that you are using a process based on pure logic.

Artists generally prefer to modify the shades in their pictures by trial and error, relying on their intuition. By setting out the colours from your own palette in the shape of a triangle – and not in a line, as is general practice – you will very quickly understand the logic behind their composition. You will instinctively progress from one complementary to another, from light to dark and from warm to cold, without giving a second thought to what you are doing. You will quickly become familiar with this new tool, and your efficiency and spontaneity will increase as a result.

Theoretical colours and commercially produced colours

When you compose your own palette, do not forget to take a few precautions:

- The principle of the colour triangle provides us with a means of mixing colours and the range of available options is extensive. You must therefore take great care with the type of pigments that you choose. It will obviously be more difficult to obtain luminous mixes with opaque colours, which absorb more light rays, than with transparent colours. Opaque colours (cadmiums, red ochre, certain earth pigments, cerulean blue, etc.) do have a role in watercolour painting. They have very effective staining properties but, more often than not, should only be applied at the end of a piece of work. If used too early they will spoil later washes.
- Whatever your favourite colours may be, always create a base of colours that approximates to the primaries. Take a good look at the manufacturer’s colour selection chart (the one painted with real pigments rather than the printed one that has been distorted through the four-colour process). See the list on page 36.
- Compare the complementsaries that you get by mixing the primaries with the equivalent complementsaries provided by the chart. Examine both intensity of colour and transparency, and choose the option that best suits your purposes.
- With any dark shade, learn to detect the light colour that is the base component. This hue will definitely be an integral element of the primary colour triangle. This will make it easy to position this shade on the correct median (for example, yellow is the base component of burnt umber).
- Do not restrict yourself to using a single brand of watercolours, as each has its own advantages. On the other hand, take a good look at each colour chart, as there are often important differences between colours of the same name.
- Try to avoid mixing more than three colours at one time and use black as little as possible.
- Before adopting a palette definitively, take care to ensure that it is set out correctly. Take time to test the possible mixes that it can provide. At the end of this chapter you will find several sample palettes. It is now down to you to invent your own!

**Renoir's and Monet's palettes**

Famous for the luminosity of their palettes, Auguste Renoir (1841-1919) and Claude Monet (1840-1926) in fact only used a very limited number of colours. They painted in oils rather than watercolour, but the theory behind colour mixing remains the same whatever the medium. The only difference can be found in the source of the white used. The watercolour painter obtains white from the reflected light on the paper, whilst the oil painter, who uses colours that completely cover his canvas, must add a white pigment that reflects light.

What are the base colours of Renoir's palette? Cobalt and ultramarine blues, madder lakes and vermilions, chrome yellow and emerald green. He also used Naples yellow, yellow ochre and the sienna earth pigments, but with the qualification: 'We can only do without the intermediate shades as these can be obtained through the other colours'.


---

**Auguste Renoir (attrib.), Head of a Woman.**
The artist used vermillion, Naples yellow, yellow ochre and sienna earth pigments to paint the flesh tones.

**An interpretation of Renoir's palette in the form of a triangle:**

- Chrome yellow in 2.
- Rose madder lake in 3.
- Emerald green in 7.
- Vermilion in 5.
- Ultramarine blue in 6.
- Cobalt blue in 12.
- Naples yellow in 16.
- Yellow ochre in 17.
- Burnt sienna in 18.

This palette is an example of how we can expand a base of primaries. Note the darkening of the base yellow from numbers 16 to 18, which, when mixed with vermillion, results in different flesh tones.
Monet's base palette is made up of cobalt blue, madder lake deep, vermilion, cadmium yellow and emerald green. His and Renoir's palettes are very similar and include the three primary subtractives. In both cases cobalt blue serves as the primary blue that approximates cyan. Madder lake deep and madder lake are substitutes for magenta; pure yellow also features. Vermilion and emerald green are essential complementsaries, the vermilion acting as an orange-red and the emerald green as a cool green, which can be easily warmed by the yellow to create a mid-green. Only Renoir adds ultramarine blue, which already contains a small amount of red. This blue is therefore slightly violet and serves as the complementary of the yellow. We can assume that Monet achieved a colour tone close to ultramarine blue by mixing madder lake deep with cobalt blue.

**Forming a palette**

Compare the colour tones of the different circles of the triangle on page 24 with the range of colours on offer at your paint supplier. You can then be sure of making a good choice of base colours and of positioning them correctly on the triangle.

Now let's highlight the differences between the base colours and the supplementary colours, the latter being easily reproduced by mixing well-chosen base colours.

**Base colours**

- Three colours, which approximate the three primaries (see page 13).
- Three colours, which approximate the complementsaries: violet-blue, green and orange-red.
- Three dark colours that belong to the family of primaries, to darken mixes without using black.

**Supplementary colours**

Your own tastes alone will dictate how you choose these compound colours. Compare a commercially manufactured colour with one that has been created by mixing base colours. At times a shade obtained by mixing primaries will be brighter and more intense than the equivalent commercially manufactured colour, at times the latter will be preferable. For example, a Winsor green (yellow shade) will always be more luminous than a mix of aureolin yellow and Winsor blue (green shade). The same applies to certain oranges, reds and violets.

**Complementary colours**

Violet-blue is situated on the cyan-magenta side of the triangle. If you like ultramarine blue and wish to recreate it by mixing phthalo blue and a magenta-like red, the result will surprisingly lack the intensity of the different ultramarine blues that are available commercially. Therefore this colour proves to be an essential requirement. Take a close look at the different ultramarine blues that the manufacturers are offering. Choose a luminous shade that is not too dark, unless you wish to place it on the median in position 24. Placing ultramarine blue in position 6 at the centre of the blue-red base of the triangle is not logical, as it does not contain enough red. Nevertheless, it can, however, be very practical to put it here, because it is
easy to correct it by experimenting with the red in position 3. Green is situated in position 4 on the cyan–yellow side of the triangle. It is very easy to create an evenly balanced mid-green through experimentation (by mixing the blue and yellow primaries). If, on the other hand, you desire to fill this space with a manufactured colour, refer to the list on page 36.

We frequently say that green is the complementary colour of red. Nevertheless, this does not mean much if we do not specify which red we are referring to! Mid-green is actually the complementary of the red that approximates to magenta, that is to say a ‘fuchsia’ red. If we are referring to a vermillion red, which is, according to subtractive synthesis, a red with some yellow added, the complementary colour would be cyan–blue, as is very clearly indicated by the median of our triangle.

Orange–red is located in position 5 on the yellow–magenta side of the triangle. You can use a vermillion, but do not forget that this colour causes opacity and should therefore only be used in some mixes. Choose the lightest and most orange shade possible. You can also create a more transparent orange–red by mixing gamboge yellow with the red that approximates to the magenta of position 3.

**Strong shadows**

By adding black to a colour you will darken it but you will also make it look dirty. The best way of deepening a shade is simply to use its complementary colour. It is, however, difficult to produce very dense dark shades by using the relatively light primaries of positions 1, 2 and 3. This is a problem, that Le Blon had encountered. In order to produce a darker hue and in the absence of a deep black, he had to saturate and thicken his colours, which is completely at odds with the transparency required in watercolour painting. Instead use colours that resemble the base primaries, but which have pigments with less effective reflective properties. They will be more intense, darker primaries, as it were, but still transparent. Here are some examples of these very useful pigments, described from lightest to darkest:

- For the base blue: the most intense of phthalo blues.
- For the base yellow: raw sienna, any brand, Rembrandt’s transparent brown or red oxide, which has yellow as its base colour in spite of the name: brown stil de grain by Daler-Rowney.
- For the base red: Blockx magenta, Rembrandt’s permanent red violet, Daler-Rowney’s permanent magenta.

**Strong shadows**

By adding black to a colour you will darken it but you will also make it look dirty. The best way of deepening a shade is simply to use its complementary colour. It is, however, difficult to produce very dense dark shades by using the relatively light primaries of positions 1, 2 and 3. This is a problem, that Le Blon had encountered. In order to produce a darker hue and in the absence of a deep black, he had to saturate and thicken his colours, which is completely at odds with the transparency required in watercolour painting. Instead use colours that resemble the base primaries, but which have pigments with less effective reflective properties. They will be more intense, darker primaries, as it were, but still transparent. Here are some examples of these very useful pigments, described from lightest to darkest:

- For the base blue: the most intense of phthalo blues.
- For the base yellow: raw sienna, any brand, Rembrandt’s transparent brown or red oxide, which has yellow as its base colour in spite of the name: brown stil de grain by Daler-Rowney.
- For the base red: Blockx magenta, Rembrandt’s permanent red violet, Daler-Rowney’s permanent magenta.

1. I prefer Rembrandt’s transparent red oxide (it is more vivid and less green) to the transparent brown oxide (position 17), although this would be more logical chromatically.
Three sample palettes
It is not necessary to fill in all the circles of the triangle with blocks of the corresponding colours. It is enough simply to choose the colours, that you consider to be essential. The brands that follow are only quoted as examples and are only relevant to the author.

The eight-colour palette
Place the three base colours (phthalo blue, lemon or aureolin yellow, Winsor permanent rose or quinacridone rose) on circles 1, 2 and 3.

For the complementary colours put a phthalo green in position 7 and a Winsor French ultramarine or light ultramarine in position 6.

For the darkened base shades place a Blockx magenta in position 21 and a transparent brown or red oxide by Rembrandt in position 18.

For compound colours, place gamboge yellow in position 9.

To produce reds for 5 and 10, mix 3 and 9. For the greens positioned in 4 and 8 mix 7 and 2, taking care when measuring out the proportions. The violets and the blues situated in positions 11 and 12 can be created by mixing 1 and 3. A little of the red of 3 can be mixed with the ultramarine in position 6, and this will then become the complementary of 2. If the blue in position 1 is a phthalo, it is dark enough to be placed in position 15. Mixing equal amounts of 4 or 7 with 21 will result in black, which you can place at the centre of the triangle.

The 13-colour palette
The three primaries (1, 2 and 3) are the same as in the previous palette: phthalo blue, lemon or aureolin yellow, and a Winsor permanent rose or quinacridone rose.

For the complementaries, put a phthalo green in position 7, a Winsor French ultramarine or light ultramarine in position 6, a Winsor & Newton scarlet lake or Rembrandt’s permanent red in position 5.

For the darkened base primaries put a Blockx magenta in position 21, a transparent brown or red oxide in position 18 and a Prussian blue in 15.

For the compound colours, put sap green in position 8, gamboge yellow in position 9, quinacridone yellow in position 16 and Winsor’s perylene maroon into position 23. Use the slightly orangey red in 5 as the complementary of the blue in position 1. Mixing perylene maroon (23) with Blockx magenta (21) is a very useful means of producing red shadows. Mixing 15, 18 and 21 will result in a true black.

The 20-colour palette
The primaries: phthalo blue in position 1, lemon or aureolin yellow in position 2, Winsor’s permanent rose or quinacridone rose in position 3, Rembrandt’s cerulean blue (phthalo) in position 13.
The complementsaries: an alizarin green in position 4, a phthalo green in position 7, a French ultramarine or a light ultramarine in position 6, a Winsor & Newton scarlet lake or Rembrandt's permanent red in position 5.

The darkened primaries: a Blockx magenta in position 21, a Rembrandt transparent red or brown oxide in position 18, a Prussian blue in 15 and a carmine in position 19.

The compound colours: a gamboge yellow in position 9, a sap green in position 8, a quinacridone yellow in position 16, a Winsor perylene maroon in 23, a cobalt in 12, a violet of your choice in position 11, a Winsor red in position 10, an ultramarine blue deep in position 24.

In the absence of phthalo blue (1), cobalt blue (12) can be used as a base primary. There is no colour in position 22. This is a matter of personal choice. It would be the logical position for a terre-verte, but these are too opaque for my liking. I make them myself by mixing 7, 18 and 3.

**Trichromatic greys**

Producing greys from the three primary colours can often work well. The colour tone created almost always contains a slight predominance of one or other of the shades. If you learn to tailor this dominant shade to your own tastes, this will greatly enrich your painting.

To create trichromatic greys, it is advisable to begin your mix with the blue. Prepare your mix to your desired tone, never forgetting that once the shade is dry it will be less intense. When you have gained the correct balance of water and pigment, keep adding red until you create a violet. A very small amount of red will usually be enough. As a last step, a few traces of yellow will tip the violet towards grey.

Remember that it is easier to warm a colour tone that is too blue than to cool down a tone that has a predominance of red and yellow. Proceed with caution when adding warm colours.

There are many ways of creating terre-vertes and umbers. In this instance I have mixed permanent rose, red oxide and phthalo green.
How to define a colour

A colour is defined by a certain number of elements. These include:

- its chromatic properties, which are directly linked to the lengths of the waves that have been emitted or reflected and to the way in which our brain decodes them;
- its intensity, which is dependent on the amount of emitted or reflected radiance. In the triangle to which we are referring, only the three subtractive primaries at the extremities are at their maximum intensity. The other colours are created by mixing these primaries and the central disc (number 31) represents the combination of the three primaries at maximum saturation, that is to say black. Each disc of the proportions triangle is divided into three equal parts, in segments of 120 degrees. Each of these segments represents 100 per cent of each colour (see page 34);
- its specific value. By presenting the three primaries and their complementaries in black and white, the differences in value between colours become apparent. The cyan disc appears dark, the magenta one even more so. The complementaries green and orange-red are close behind, whilst violet becomes the darkest value. As colours each have their own value, it is to be expected that this will decrease if their saturation drops. We therefore have to reduce the value of cyan and magenta to 40 per cent if they are to equate to yellow (increased to 100 per cent). To chart the colours in our triangle consistently, we position the values of the shades in order on the medians with the discs converging towards the black central point. But to equate discs 13 and 19, which have a cyan and magenta base, to disc 16 with its yellow base, we are compelled to lower the intensity and therefore the value of the cyan and the magenta. In the same way discs 14 and 20 are made to equate to number 17, and discs 15 and 21 to disc number 18;
- The value of its shadow. All colours can be shaded, light as well as dark, and shading will degrade each of them. When we work on a shadow, it is not enough to increase the intensity or saturation of the local tone of the object. To obtain a good result we must first work on the value of the shade, darkening the original colour tone by adding the complementary (or two separate colours that make up this complementary). Then, ideally when the surface is still wet, add a brushstroke of the initial colour but in a stronger density. This will merge with the tone with the darkened value (which was obtained in the first step). The shadow is therefore a result of combining the value of the darkened shade with a denser version of the original colour.

The primaries and the complementaries.

Primaries and complementaries in black and white.

Sample palette that can be used to shade the yellow petals.
Jean-Louis Morelle, *Curved Nude*

A partial drawing in a very low value with the tip of the brush. It thus avoids any clashes between the harshness of the pencil and the gentle shades of the watercolour.
Using the colour triangle effectively

Offset printers commonly measure colour saturation by screen percentage. If cyan is screened at 50 per cent on a 1 centimetre square, this means that the uniformly spaced dots cover half the surface of the square. If it is screened at 10 per cent, the dots will only cover one tenth of the square, etc.

This is the realm of the visual. Rather than indicate the trichromatic composition of the 31 hues in figures, we have decided to divide the surface of each circle into three equal segments, which represent the three primary colours: cyan, magenta and yellow. Each of these segments is divided into ten equal portions, which correspond to the density of the screen.

Returning to the example of cyan, if this shade is screened at 100 per cent in the disc on the left vertex of the triangle, it will take up the entire corresponding segment of the circle in the proportions triangle. Because there is no yellow or magenta their respective areas remain empty. In disc number 7, the one that approximates to emerald green or phthalo green, blue is at 80 per cent (which is four fifths of a third of the circle) and yellow at 40 per cent (which is two fifths of a third of the circle). By comparing the colour triangle with the proportions triangle you can thus break down each shade. Or, conversely, train yourself to recreate colours from their primary components.
The educational philosophy of this book is based on the formation of your own palette, which will act as a model colour triangle. These 31 colours enable you to pick out:

- The group of primaries (numbers 1, 2 and 3). The cyan is similar to phthalo and cerulean blue, the yellow to aureolin, lemon and transparent yellow and the magenta to all quinacridone roses.

- The group of bichromatic complementary colours (numbers 4, 5 and 6). The green is similar to alizarin green and phthalo green (yellow shade), the orange-red to vermilions (opaque), permanent reds, rose dorés and scarlet lakes and the violet-blue to ultramarine blues and ultramarine violets.

- The group of intermediate bichromatic colours (numbers 7, 8, 9, 10, 11 and 12). The following are similar: number 7 to phthalo greens (blue shade) and emerald greens; number 8 to light English greens and sap greens; number 9 to gamboge yellows, Indian yellows and cadmium oranges (opaque); number 10 to quinacridone reds and all cadmium reds; number 11 to all violets and mauves; number 12 to cobalt blues.

- The group of trichromatic colours (from numbers 13 to 30). The following are similar: number 15 to Prussian blues, number 22 to terre-vertes, number 26 to olive greens, number 16 to quinacridone yellows and yellow ochres, number 17 to raw umbers, number 18 to burnt umbers and brown oxides, number 23 to red ochres, number 28 to perylene maroons and brown madder alizarins, and number 21 to magentas.

All these comparisons are in part subjective, as everyone perceives colours differently. They are simply meant to encourage you to compare your own mixes with those available on the market. Once you have done this, do not buy all thirty colours but rather refer to the paragraph on limited palettes.
<table>
<thead>
<tr>
<th>Manufactured colours that equate to those on the model triangle</th>
<th>Approximations to base primary blue</th>
<th>Approximations to base primary yellow</th>
<th>Approximations to base primary red</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primaries</strong></td>
<td><strong>Position 1</strong></td>
<td><strong>Position 2</strong></td>
<td><strong>Position 3</strong></td>
</tr>
<tr>
<td>• Blockx blue</td>
<td>• Certain lemon yellows, all brands (check transparency)</td>
<td>• Quinacridone rose (Rembrandt)</td>
<td></td>
</tr>
<tr>
<td>• Cerulean blue phthalo (Rembrandt, transparent but with mild staining properties)</td>
<td>• Blockx yellow</td>
<td>• Brilliant purple (Schmincke)</td>
<td></td>
</tr>
<tr>
<td>• Phthalo blue green (Rembrandt)</td>
<td>• Aureolin, all brands</td>
<td>• Magenta (Schmincke)</td>
<td></td>
</tr>
<tr>
<td>• Cinereous blue (Sennelier)</td>
<td>• Transparent yellow (Winsor &amp; Newton)</td>
<td>• Permanent rose (Winsor &amp; Newton)</td>
<td></td>
</tr>
<tr>
<td>• Hortensia blue (Linel)</td>
<td>• Pure yellow or transparent yellow (Schmincke)</td>
<td>• Quinacridone magenta (Winsor &amp; Newton)</td>
<td></td>
</tr>
<tr>
<td>• Winsor blue green shade (Winsor &amp; Newton)</td>
<td></td>
<td>• Carmine (all brands)</td>
<td></td>
</tr>
<tr>
<td><strong>Darkened primaries</strong></td>
<td><strong>Position 6</strong></td>
<td><strong>Position 4</strong></td>
<td><strong>Position 5</strong></td>
</tr>
<tr>
<td>• Generally speaking, all phthalo blues</td>
<td>• French ultramarine (Winsor &amp; Newton)</td>
<td>• Winsor green yellow shade (Winsor &amp; Newton)</td>
<td>• Magenta (Blockx)</td>
</tr>
<tr>
<td>• Prussian blue (all brands)</td>
<td>• Ultramarine violet (Schmincke)</td>
<td>• Helio green (Schmincke)</td>
<td>• Purple magenta or brilliant purple (Schmincke)</td>
</tr>
<tr>
<td>• Phthalo blue (Sennelier)</td>
<td>• Ultramarine blue deep (Blockx)</td>
<td>• Alizarin green (Daler-Rowney)</td>
<td>• Quinacridone purple (Sennelier)</td>
</tr>
<tr>
<td>• Indigo blue (Sennelier)</td>
<td>• Ultramarine violet (Blockx)</td>
<td>• Permanent green light (Sennelier)</td>
<td>• Permanent red-violet (Rembrandt)</td>
</tr>
<tr>
<td>• Moggar blue (Linel)</td>
<td>• Ultramarine deep (Rembrandt)</td>
<td>• Vermilion (all brands, but the pigment is opaque)</td>
<td>• Permanent magenta (Daler-Rowney)</td>
</tr>
<tr>
<td>• Monestial blue (Phthalo), (Daler-Rowney)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Complementaries</strong></td>
<td><strong>Position 7</strong></td>
<td><strong>Position 8</strong></td>
<td><strong>Position 9</strong></td>
</tr>
<tr>
<td>• Brilliant red violet (Schmincke)</td>
<td>• Armor green (Linel)</td>
<td>• Permanent orange (Rembrandt)</td>
<td>• Winsor red (Winsor &amp; Newton)</td>
</tr>
<tr>
<td>• Egypt violet (Linel)</td>
<td>• Winsor green blue shade (Winsor &amp; Newton)</td>
<td>• Gamboge (all brands)</td>
<td>• Quinacridone red (Winsor &amp; Newton)</td>
</tr>
<tr>
<td>• Ultramarine violet (Rembrandt)</td>
<td>• Monestial green (phthalo) (Daler-Rowney)</td>
<td>• Indian yellow (Linel)</td>
<td>• Permanent rose (Daler-Rowney)</td>
</tr>
<tr>
<td>• Permanent mauve (Winsor &amp; Newton)</td>
<td>• Permanent mauve (Daler-Rowney)</td>
<td>• Indian yellow (Daler-Rowney)</td>
<td></td>
</tr>
<tr>
<td>• Winsor violet (Winsor &amp; Newton)</td>
<td>• Cobalt blues (all brands, but they are semi-opaque)</td>
<td>• Winsor red (Winsor &amp; Newton)</td>
<td></td>
</tr>
<tr>
<td>• Permanent mauve (Daler-Rowney)</td>
<td>• Phthalo blue red (Rembrandt)</td>
<td>• Quinacridone red (Winsor &amp; Newton)</td>
<td></td>
</tr>
<tr>
<td><strong>Compound colours</strong></td>
<td><strong>Position 11</strong></td>
<td><strong>Position 12</strong></td>
<td><strong>Position 10</strong></td>
</tr>
<tr>
<td>• Permanent green (Schmincke)</td>
<td>• Permanent green (Schmincke)</td>
<td>• Winsor red (Winsor &amp; Newton)</td>
<td></td>
</tr>
<tr>
<td>• English green light (Sennelier)</td>
<td>• English green light (Sennelier)</td>
<td>• Quinacridone red (Winsor &amp; Newton)</td>
<td></td>
</tr>
<tr>
<td>• Intense green (Linel)</td>
<td>• Intense green (Linel)</td>
<td>• Permanent rose (Daler-Rowney)</td>
<td></td>
</tr>
</tbody>
</table>

Please be aware that for the majority of brands the denomination 'magenta' does not correspond to the magenta used in printing, which will continue to be our visual point of reference. In comparison the magentas that are available commercially are often too dark and too violet.
Building on experience

Once you are familiar with the colour triangle you will know how to:

- Find out what proportions of each of the three primaries have been used to make up a colour tone;
- Vary the luminosity of a tone from its very lightest (without fading it to excess) to its very darkest (without blackening it), playing with the proportions of the primaries;
- Use each colour with its complementary to reduce intensity (if a colour tone is too red, for example, simply add a small amount of green to mute it), to produce a shade and also conversely to heighten intensity by the effect of simultaneous contrast;
- Warm up and cool down colours. Our brain associates yellow and red with warm colours and blue with cold colours. We see any shade with a hint of yellow as warm, and the higher the proportion of yellow the more this colour will be seen as warm (for example, carmine appears colder than vermilion). On the other hand we see any shade with a trace of blue as cold, and the higher the proportion of blue, the more this colour is considered to be cold (for example, pink-mauves appear warmer than violet-blues).

Conclusion

At the close of this chapter on colour perhaps I should speak of my personal experience. I am going to recall the relationship with my own triangular palette, a relationship which I thought would be short-lived, but which survives today, due to the creative energy which goes into mixes. Through my work, my vision of the external world has undergone a dramatic transformation. Over the years I have continually perceived more shades of colour in nature. I have a sharper awareness of areas of the triangle where I never used to venture. I had to admit that it was because I had discovered (sometimes by chance) certain colour tones on my palette, that I recognized them in the world around me. Having acquired the habit of always mixing the same colours from a restricted palette, I let this world of colour take on a life of its own, based on its own energies and needs. The shades in our day-to-day universe thus seem to imitate those of our palette. This is the stage when painting begins to live within us.

In this book I have attempted to replace research into the hypothetical laws on colour harmony with a new way of organizing the area where all mixes occur - the palette. Rather than look for definitive answers, I have concentrated on the consistency of this all too often neglected tool, imagining that knowledge can burst forth from our movements and actions.

Jean-Louis Morelle,
Landais Road in Shower
In this painting, merging colours together produces a happy result. The difficulty here lies in preventing yourself from intervening too much.
This chapter investigates how water, paper and pigments interact with one another. A precise description of different phenomena aims to inject new energy into your own observations. Do not see the rules that follow as a catalogue of simple solutions that can be applied without discernment. Unlike other techniques (oil painting, acrylic, dry and oil pastels etc.), in which the materials have an inertia of their own, watercolour painting is based on an in-depth knowledge of water, which is an elusive and moving substance. Water is a vehicle, which, within the framework of very rigid laws, possesses its own metamorphic energy. It requires, above all else, the respect of the painter.

Do not approach the different techniques shown in this book in too rigid a manner. It is by moving from one technique to another, from one action to another, that you will give your paintings their unique character. These techniques work in a similar way to a game of cards. The cards have their own suits and numbers, but the way that you shuffle the deck, pass from card to card to get to a hand, your preference for certain partnerships over others, will lay the foundations for your own art.
ïques
Wet-on-wet technique

We will go straight into the most complex, but also the most basic, of all the techniques of watercolour painting. This technique requires a calm mind, spontaneous movements and vigilance at every moment. It unites all the qualities that watercolour demands. This chapter aims to throw new light on to the phenomena that come into play when the water on the paper meets the water on the brush.

Stretch your paper tightly over a board or frame. Using a thick brush, spread plenty of water over the whole surface of the paper. Clear any surplus water and admire the sheen of your wet paper: the adventure is about to begin ...

Two kinds of water meet.
Whether loaded with pigment or not, the water on the brush forges a path for itself in the water first applied to the paper.

In the wet-on-wet technique, your paper will become the place where two different kinds of water meet: the water that has already saturated the paper and the water that is carried on your brush.

The characteristics of each type of water are very different. The first soaks the paper for a period of time and in varying quantities, as you will learn with practice. In theory, the water is calm and static, unless you decide to tilt your support and let gravity come into play.

The water from the moving brush is active. The pigment that accompanies this water can, depending on its density, encumber its fluidity. The way that the water acts is completely reliant on the proportions of water and pigment on your brush.
**Choice of brush**

![A squirrel hair brush in 'drawing mode'. It is very important to only touch the paper with the tip, which should never be flattened.](image)

You can only wet the surface of the paper correctly using a brush that holds a substantial amount of water. A squirrel hair brush is ideal. Loaded with pure water, it more than adequately soaks the paper. When you paint, this will save you from constantly having to supplement your water/pigment mixture and will enable you to act more spontaneously, without being interrupted. The fineness of the tip allows you to draw very accurately on wet and dry paper using pigment that is suspended in the water. It is also very easy to remove a surplus of water or pigment from the paper and to tone down the density of a colour. This extent of the capillary action is determined by the fineness of the tip (which accelerates the process) and the reservoir, i.e. the swollen part of the brush head. With the squirrel hair brush you therefore have a reservoir of water, a drawing tool and an 'eraser' (i.e. the ability to remove water) in one.

**Preparing the paper**

You can never wet watercolour paper too much. It needs to absorb an awful lot to be wet through, so that you can prolong your potential painting time. By wetting paper correctly, you are extending the water cycle, thus leaving more time to act. The water must penetrate the fibres. The effect will not be immediate and excess water should be removed or absorbed. By pinching the tip of your squirrel hair brush to remove water, you are helping the surface water to be drawn up by capillary action.

![Capillary action. The moist compressed hairs of the tip, linked to the wide belly of the brush, cause the water to rise. The water is not drawn upwards instantaneously; this occurs after two to three seconds.](image)
It is better to stretch the paper to avoid wrinkling. It can be applied to a board, by wetting it on the back and fixing it in place with self-adhesive tape. You can also tighten it over a stretcher designed for oil paintings. If you do this, cut the paper to the size of the stretcher, adding a border of at least three centimetres, so that it can be folded back. Soak the paper in water for five minutes and then staple it, whilst it is wet and flexible, to the edge of the stretcher, in exactly the same way as with a canvas. Begin by stapling the middle of each side.

Do not confuse the front of the stretcher (with its slanting wood) with the back. As the paper dries it will draw in on itself, tightening, just like a drum hide. This perfectly level surface, which can be recreated after each major wash, will make it easier to manage the water flow, the regularity of absorption and increases or decreases in pigment density.

Pioneered by the watercolour painters and poster artists of the 19th century, this technique provides a number of advantages. Because a stretcher is always lighter than a board, your support will be more manageable when you are working with larger size paintings. You can simply tilt it and use gravity to direct the flow of the washes.

If you choose to paint in ‘wet-on-wet’ on a restricted area of your paper, you will, however, wet beyond the area that is to be covered. The blends created by the pigments suspended on the wet paper should be able to spread freely, without being blocked by the edge of the damp area.
Ernest Lessieux, Landscape

This watercolour from the end of the 19th century shows exceptional mastery, as much in its proportioning of colours as in its regard for the various stages of the water cycle on the paper. Each element of the painting has been created on a wet surface, which was very rare at the time: a hint of radiance in the light pink of the setting sun, shades of each of the terre-vertes in the vegetation, with, at times, a tinge of red and the extremely subtle violet tone of the trees in the background. The tree to the left has certainly been painted when the paper was almost dry, as is indicated by the absence of blurring at the edge of the leaves. The dark pigments can only have been added at the last moment, once the surface had become matt.
The key moment

You need to wait for exactly the right moment to release your pigment on to the damp paper. For pronounced areas of colour blending you can paint on to a very wet surface with a brush that is loaded with pigment and water.

This technique is very useful for depicting skies and all luminous atmospheres. Do your best to paint the light that is bathing your subject before painting the subject itself. To do this you need to demonstrate a level of abstraction and think logically before acting. Observe the scene carefully, reserve the white, and leave some areas untouched, outlining them with a single stroke of your brush.

If you wish to alter colour tones on a wet surface, reduce the proportion of water on your brush. Always use denser, more intense colours than the effect that you are hoping to achieve once the picture is dry.

Drawing on a very wet shiny background. The pigment in the brush is much denser than the result would suggest. The abundance of water on the paper causes a high level of colour blending.

Drawing on a semi-wet background. The blending is less pronounced.
The surface of the paper

The surface of the paper will obviously change as the water is absorbed and dries. From being very shiny, it will gradually take on a matt appearance, which it will then lose, but the paper will remain damp to the touch for a while longer.

If you work on a partially wet and therefore matt surface, the shapes that you draw will gradually spread out less, especially if the pigment on your brush is becoming denser and if it contains increasingly less water. If you are skilful you can even work on paper that is almost dry, retaining just a small amount of water. Your strokes will thus disperse only slightly, retaining their luminosity.

Backlit photograph of paper with a very shiny surface, used to create a high level of diffusion, and paper with a matt surface for slight blurring of strokes.

Drawings on a matt surface. In the two examples the brush is loaded with a very thick pigment and its tip barely skims the paper. The varying results can only be attributed to the differing degrees of moistness of the paper. Much patience is required in waiting for the correct moment to act. In the lower picture the paper has almost dried whilst the work is being completed.
Colour density
Now observe how the load of water and pigment balances itself out in your brush. You should not, in theory, run into any difficulties when blending large areas of colour. Before beginning, use your squirrel hair brush to place a drop of your mixture on to a piece of dry paper. This should run smoothly, without catching, releasing a truly brilliant colour. When your brush-stroke encounters the water-saturated surface of the paper, it will spread out over a wide area. Your painting results, in effect, from the meeting of brush with paper, the state of both being determining factors.

The less moist your paper, the more visible your brushwork will become. If you wish to paint on a partially wet or matt support, but still want your strokes to be blurred, prepare a colour using a small amount of water, in such a way that its consistency is reminiscent of gouache. Do not forget that this type of surface, once dry, will fade your colours, reducing their intensity a great deal. Therefore, maintain the intensity of colour and do not be afraid to strengthen shades to compensate for the effects of the wet-on-wet technique. Do not worry too much about colours that are too vivid on wet surfaces. There is a very high chance that they will become muted of their own accord.
How to control the halo effect

When using the wet-on-wet technique, accidents can easily happen. For example, a drop of water may fall from the brush onto the still moist paper and create a halo. Luckily, this mishap can be turned to good fortune without too much difficulty and in fact become a creative tool. If you master this technique, you can create transparency and produce light.

Observe a drop of water falling onto a moist or drying pigmented surface. The water spreads out on the wet surface and lightens it considerably. The water from the brush falls on to the water on the paper, carrying those pigments suspended within it towards the edges. When this water comes into contact with an area that is much less moist, the accumulated pigments create a feathering effect that is either darker or lighter. If all of the paper is very wet, the process will create a continuous blend of colours.

When the halo forms, three variables come into play: the quantity of the water that has fallen, the state of the drying paper and your reaction time. If the wash is still wet, promptly dry your squirrel hair brush by pinching it. Using the tip of the brush, lift out the water from the centre of your halo making use of capillary action. This will enable you to remove pigment from the area. There is, however, a good chance that the pigment on the edge of your halo will quickly return to the centre towards the tip of the brush. In fact, if there is not enough water, you will lose the dramatic effect of your halo. The pigment will change direction and begin to flow back towards the middle, causing the halo effect to disappear.

The halo is only problematic if it occurs on a wash that is almost dry. In this case, the water that has spread carries pigment that is still fresh and creates a very pronounced feathering effect. Attempting to lift out the water from the centre of your halo will achieve nothing other than an even more obvious area of white. Don't try to flush away the whole thing with pure water. Your wash has been applied too recently and will thus be totally destroyed and the area of the halo will become even more pronounced.
The only solution is to completely dry your paper. It is only when you have done this that you can spread pure water beyond the edge of the halo. You need to remove the surplus pigment made by the feathered edge, whilst still preserving the pigment of the painted surface.

The procedure is as follows. Moisten the paper once more with plenty of water, taking care not to press your brush on to the pigment of your painted surface. This surface must be moistened by the water but should not, on any account, be weakened. The larger a drop of water, the less chance there is of rubbing or damaging the pigmentation underneath. You can now easily lift out the surplus water from the feathered edge, using capillary action. Depending on the properties of your paper, you may observe some depigmentation on the surrounding area of the wash. The light centre of your halo will remain but the iridescence will be much reduced.

Whatever happens, do not be too discouraged by the outline of your halo. It forms part of the life of your watercolour and there is a good chance that further additions to your work will make you forget all about it.
Ewa Karpińska

Cabbages in an Autumn Garden
Reproducing the halo effect

A very simple exercise enables you to recreate a halo whilst at the same time endeavouring to suppress the feathering effect and an accumulation of pigment. This is achieved by emptying the brush by draining it on the side of a container. If you gently touch a matt surface with the tip of the drained brush (pinching it dry would be ineffective in this case) the small quantity of water that the brush releases will enable you to draw with the pigment without causing feathering.

The outline that has been created in this way can be seen as a halo that has been deprived of water. The whiteness of the paper will appear at this point. Nevertheless, if the light emitted does not seem sufficient, carry out the exercise once again, always draining the brush beforehand. If you correctly estimate the tiny amount of water that is needed on your brush and do not act too quickly – in other words, if you are patient enough to wait until your wash is no longer shiny but matt – you will be able to bring out whites on a wet surface. Using a very fine squirrel hair brush, train yourself to make very fine lines, such as the ones depicted here.

Example of very fine lines created with pure water in suspended pigment on a matt surface.

Detail of picture opposite. To draw the veins of the cabbage leaves, the artist recreates the halo effect, and directs the drop of water with the very tip of the brush.

Prepare a pool of water in a matt wash with several pigments

Allow a small drop of pure water to fall and draw it up immediately with the tip of a second brush. The white of the paper should appear but has a tendency to darken because of bleeding by the purple. To retain the light, repeat the exercise, once again allowing a minuscule drop of pure water to fall.

Lift out the water immediately to prevent feathering. After two or even three attempts the light settles. You can even give your patch of light a geometric shape.
Strokes and brushes

As we have seen, squirrel hair is the preferred brush of the watercolour painter, but other tools can also be used to good effect. Whether they are made from natural hair (sable, squirrel, polecat, goat, etc.) or synthetic fibres, the head of the brush is shaped in such a way that it has an enormous impact on the manner in which water is loaded and on how you hold the brush. To prove this to yourself, put a Japanese calligraphy brush and a traditional squirrel hair brush side by side. Both are known for their fine rounded tips (although the squirrel hair is neater) and their absorbency. The calligraphy brush, which is long and thin without any curves, should be held vertically to enable you to move spontaneously. The thickness of the stroke on the paper is determined by the pressure exerted on the tip. The squirrel hair brush is shorter and allows you to disperse water laterally which is very useful for laying washes in pure water or for performing sweeping and oval strokes.

Each tool thus has its own qualities. It is very easy to draw straight lines with the end of a square-edged brush or to use its flat side to dampen water-reduced surfaces. Strokes with rounded brushes on wet surfaces are well pitched and are neither too angular nor too gentle. The Kolinsky sables are similar to the squirrel hairs but cannot wet wide surfaces, as their capacity to carry pure water is not great enough. They do, however, enable you to make very precise

- Strokes made using a flat brush in the shape of a cat's tongue, with the flat side and edge of the brush on wet and dry surfaces.

- Strokes made using a flat square-edged brush, with the flat side and edge of the brush.

- Strokes made using a Japanese brush, with curves, inverted curves, and exertion of pressure on the tip.
drawings on both wet and dry surfaces. You can also dilute a fairly large quantity of watercolour paint in a bottle, and use the bottle as an ink-well, dipping a bamboo stick into it to paint on to dry paper. Do not forget that any lines drawn will change in accordance with the position of your hand; for example, holding a rounded or square shaped brush at different distances from its ferrule will not yield the same results. If you wish to vary your way of moving you can invent your own utensils, but bear in mind that whilst a tool is borne out of the requirements of a particular action, the action will also adapt to the tool.

Example of a sketch created by using a sharpened bamboo stick soaked in a jar filled with liquid watercolour paint.
(By Jean-Louis Morelle.)
Painting with pure water

Painting in pure water alone on to a wash whilst it is still wet is as effective as painting with a pigment-loaded brush. It represents the pinnacle of the wet-on-wet technique.

If you choose to recreate a halo, you can move away from its initial rounded form and turn it into complex shapes (objects, flowers, geometric lines, etc.). Never forget, however, that this exercise in drawing in pure water, into pigment suspended in water on a wet surface, requires a very long training period and rare dexterity. If, after about ten attempts, you are still getting results that do not match what you were hoping for, do not despair. Whilst you will need to persevere to achieve success using this technique, these repeated attempts will help you to get to know your support. Your fear of working on wet surfaces will fade away and the wet paper will almost seem like living matter, on which your actions will develop. By preparing your surface, by learning to wait for the right moment, by familiarizing yourself with the proportions of water/pigment contained in your brush, by lifting out, by lightening, and by adding pigment, you will become a better watercolour painter each day.
The artist first draws his composition in pencil and in so doing notes the colours on paper. Once this sketch has been completed he begins his watercolour, working in wet-on-wet.
Techniques using dry surfaces

Once you are familiar with painting in watercolour on wet surfaces, it will be easier for you to try dry surface techniques. Now that you have lost your fear of using too much water, your brushwork on dry paper will change radically, becoming more fluid. In this technique different strokes unite without the threat of uncontrolled colour blends. Colours become denser or blurred and light is created.

Some recommendations
When you approach dry surface techniques, bear in mind the recommendations and observations of the previous chapter:

- Be mindful of the importance of completely wetting your paper through, which will prolong the water cycle and as a result the length of time that you have to act;
- Respect the paper's water cycle: once the water has embarked on the drying process, any intervention will only disturb and muddy the pigment. The brightness will disappear;
- Note the importance of the proportions of water/pigment that are carried on the brush. These proportions will determine to what extent colours will blend into one another, and whether drawings on wet surfaces are clear. If the brush contains more water than pigment, the blending effects will be gentle; if it contains less, they will be bolder;
- Bear in mind the capillary properties of the tip of the squirrel hair brush. This tip enables you to lift out both excess water and pigment;
- Remember that reproducing a halo will
enable you to clear areas of white in washes that are still wet;

- Keep an eye on the variations in colour intensity, which pale during drying. These variations are all the more noticeable as it is precisely when the pigment is suspended within the wet surface that the colour is at its most intense. Consequently, it is important to strengthen the pigment before drying takes place, in anticipation of the colours becoming weaker. Generally speaking, you will need much less water on the brush when applying pigment for the second time.

\[\text{Gérard Leserre, Istanbul}\]
The white bursts of light in the town reflect the sombre representations of the boats and waves. The light is fading, and the grey of the water draws warmth from the yellow of the sky.
In contact with the senses
When working on a composition on a dry sheet of paper, the watercolourist, used to painting on wet surfaces, always recreates a separate wet-on-wet area. The watercolour strokes do not consist of pigment with a little liquid added but are real pools of water with pigment suspended within them.

These pools dry relatively slowly. If you tilt your support and paint without being afraid of wetting the paper, the excess liquid from your brushstrokes will form a drop of water, which could potentially be quite large. Quickly pinch your brush to remove the water, then lift out the large drop before it becomes troublesome. You will soon become familiar with this action.

A fellow painter once made the following confession to me: 'I don’t like watercolour painting, as it requires too much water...’ Your whole relationship with this technique is based on this simple observation. It is not a question of simply being moved by the transparency of the colours, but of knowing how to compose your painting with water. In oil painting the material has a certain sensuality. This is conveyed through a pleasure of working and emulsifying oil paint, of making it pulsate with energy. In watercolour painting we are also physically ‘in touch’ with water. No art form could develop without deep physical contact with the material or element that is being manipulated. This sense of touch also applies to paper: never work on the surface of a paper that you do not find pleasing.

This approach influences all kinds of behaviour. When working with oil, the act of giving life to a substance is very active, because the mixtures are prepared on a palette before being placed on the canvas. In watercolour painting, water itself creates mixtures when it merges with colours. We thus have to give it the time that it needs to perform this action.
The rocks are evoked by large, wet brushstrokes on dry paper. Their jagged edge has been shaped on a semi-wet surface.
Achieving fluidity

When you begin to paint on dry paper, keep another piece of paper, identical to that you are painting on, close to your palette. This will be your means of testing both your colour and the balance of the water/pigment mix, which is contained on the brush.

The first brushstroke should glide across the paper without catching and its surface should be shiny. When you are familiar with this technique, you will know how to prepare the correct proportions of water so that your brushstrokes will not dry before you have finished working.

To sum up, a single brushstroke should not dry immediately. You can work on your stroke by removing and adding pigment or by blending colours on the paper.

An example of a rough brushstroke without water. Why not, if the result fits in well with the whole composition?

A less successful result: a semi-wet stroke muddied by a hesitant brush

The pigment settles calmly on to the paper in the midst of a wet stroke.
To paint these poppies, Ewa Karpińska has placed several pools of water in contact with one another on dry paper. These pools have been strengthened by red and green pigments, even before they were joined at the most opportune moment. To produce such a piece of work, you need to be patient and know very well how paper reacts.

**The second brush**

When two wet surfaces unite, pigments bleed from the wettest area to the driest. Each watercolour brushstroke has its own particular level of wetness. Once it begins to dry and comes into contact with a second brush, that contains too much pure water, this water will run into the pigmented area and create a halo, its extremities feathering out.

If, however, you wish to blend colours, the watercolour brushstroke should remain wetter than the neighbouring surface into which you wish to bleed the pigment. It is therefore important to act quickly. Move a second brush containing a little pure water along one side of this coloured brushstroke in order to prepare the area where the two strokes will merge.

Once you have acted, there is no turning back. The slightest alteration will upset the blend to the point of destroying it completely. You therefore only have one chance to move and it is better to accept the result with its imperfections than to try to correct it.

When working on dry paper, if you wish to blur a white that has been reserved at the centre of a damp area, you can follow the procedure explained above by wetting the edges of the reserved area. It is nevertheless preferable (especially if the reserved areas are small) to release a minuscule drop of water, which will come into contact with the edges in question. It will, however, be necessary to promptly lift out the surplus water to avoid the formation of a halo.

To blend colours into one another on a dry support, do not, on any account, spread the damp brushstroke with water. Maintain some distance from the brushstroke concerned, and then proceed towards it gently with a partially wet brush (1). Then place the brush in contact with the stroke (2). The pigment will then merge in the cleared area (3). To keep the blend looking fresh, do not touch it again.
Repeat the procedure two or three times until the blend of colours has stabilized, without having intruded too much on the reserved area. Painting with two brushes at the same time thus creates a stylistic link between the two techniques that we have approached (colour blends on wet surfaces and silhouettes shaped from pools on dry paper). This second brush should always be within easy reach so that you can act quickly, without anything getting in the way. The brush should be clean and either be pinched dry or moistened. It will dampen the surface adjacent to your brushstroke. This surface will be brought into contact with your brushstroke, and merging will occur naturally.
Back and side lighting effect on vase. First draw the outlines of the shadows on the object before filling in the surface. The edges of the shade thus continue to merge softly.

Studying the subject
Before beginning your composition, take time to really examine your subject. For example, to express the brilliant light on a vase, observe the subject by screwing up your eyes, only allowing a weak light to filter through your eyelids. In this way, the areas of shadow will stand out distinctly, and intermediate values will, as it were, be ‘erased’.

To effectively represent these lights and darks, first set down the boundaries of light or shadow on the object with your brush. Then re-cover the whole of the shadow, adding more pigment to the darkest areas. Such compositional precision is all the more essential because water is more prone to merging than any other element.

The blurred edge
To create a distinct shape with a blurred edge, you will need to restrict the area of blending, which will not be easy. In this situation it is better to replace your squirrel hair brush with one that is 8 or 10 millimetres wide.

If you wish blending to occur in a narrow area (4 to 5 millimetres for example), there is a risk that you may load too much water on to your squirrel hair brush, whilst the other type of brush enables you to moisten the surface of the contact area without overdoing it. The more the pigment to be merged dries, the easier it is to contain the blend of colours on the paper. You can repeat the same action two or three times to stabilize the result, which will not be the case with more extensive colour blends.
Gérard Leserre
*Mist Over the Port of Ostend*

The architecture of the port is evoked by a wash placed on top of another wash that has dried. This second wash has been softened in certain areas, to such an extent that it merges into the first. The white of the paper has been reserved on the mast and the boat's cabin.

Jean-Louis Morelle
*November Street*

Passing a damp brush over the edge of the still wet surface has blurred many linear elements.
The invisible halo
There is always the option of blocking a blend of colours that is becoming a little too intrusive. Of course, as we have just seen, it is not possible to act directly on the pigment. On the other hand, whilst you are observing the moving colours, look at the empty area into which they are unfurling. Within this area, using your squirrel hair brush loaded with water, draw the shape with which you want to halt your blend. If this water had been applied to suspended pigment, it would have formed an iridescent halo, but will now simply spread out to meet the forming colour blend and halt it very gently.

Depigmented brushwork
Those who look a little more closely into the background of certain watercolour paintings by J.M.W. Turner (1775–1851) are often surprised by the small amount of pigment that has been applied to the paper. The significance of these extremely weak value colours is revealed when the watercolour is observed from a distance. Contrary to all expectations, these subtly present colours do not at all escape our notice and really bring the paper to life. We know little of Turner’s techniques, other than that he completely saturated his paper when commencing a piece of work.
When we wish to feed extremely pale marks on to the surface, our touch is often too heavy and the values that we apply to the paper appear too conspicuous. It is as if we need to be heavy-handed initially to be able to produce delicate strokes later on (think of the goldsmith who must balance the trays of his scales, which are filled with gold powder, by removing the tiniest of excess weights). In this situation it is once again essential to use a very wet watercolour brushstroke. If you lift out the excess water with the tip of the brush, the sparsely distributed pigment will also be lifted out, and you can then easily balance the mark to achieve your desired value.
Denser brushstrokes
To make a pigment denser it will obviously be necessary to follow a procedure that is the opposite of the one set out in the preceding paragraph. It is only justifiable to use this procedure if you wish to fine tune a stroke so that it does not appear uniform and has a higher level of pigment in some areas than in others. The density of pigment suspended in liquid decreases in very delicate shades whilst they are still wet. We need to represent the shapes of petals and leaves with much subtlety and simplicity. It is thus sometimes preferable to begin by lifting out the liquid from a brushstroke to reduce its level of moistness before applying more pigment in certain areas. To find the appropriate colour and value of a brushstroke, you must therefore remove and add pigment alternately, that is lift out liquid before adding pigment once again. This operation can continue to be carried out for as long as the brushstroke is wet.

Edge darkening
If we transfer a surplus of water to a pigmented brushstroke that is still wet, we may flood it completely. Suspended pigments are then carried to the edges in accordance with the theory of halo formation. The result is edge darkening, which is well known to watercolour painters. Such accumulations of pigment can have interesting graphical effects, and are, moreover, often retained by artists. If, however, you do not wish to keep these darkened edges, you can wet them once again after drying (which stabilizes the stroke) by applying a few large drops of water. Afterwards, lift out this water with the tip of the brush. The darkened edge will disappear with the water.
Philippe Mothe
Snow on the Edge of the Marne
An almost abstract view, which shows pigmented brushwork at its best, indicated by the minuscule halos placed at the top of the trees.

Philippe Mothe, The Lighthouse
Dense and depigmented brushstrokes.
Jean-Louis Morelle, *The Dictionary*

This watercolour demonstrates the use of very strong densities obtained by opaque pigments applied in successive washes, sometimes on wet surfaces, sometimes on dry. This is an arduous task - you must take care not to muddy the pigment of the lower layers. The more opaque a pigment is, the more important it is that it remains still when suspended in water, so it can dry without moving.
How to test your paper

Lay a uniform colour wash in the shade of your choice on a strip of paper that has been divided into three parts. Once it is dry, the first third of the strip can be used as the control. Quickly lay a second very wet wash on the middle section using another colour. Now observe the surface of the paper. Does it tend to smudge? Has the first colour dissolved to any extent? Using a large amount of pure water wet the final third and then lift out the excess fluid. Whilst the surface is still wet, rub it gently using a hard brush. Depending on the paper, pigment will come cleanly away or be resistant to the rubbing, with no formation of a pleasing light area.

Each type of paper has its own qualities, but none will allow you to both remove pigment from some areas and to apply a succession of glazes on to other areas. Therefore, use the paper that best suits your technique. You may also be able to add to the list provided.

- Montval paper - A great deal of depigmentation of the first wash after the second has been laid. Very sensitive to rubbing with brush with almost total depigmentation.
- Fabriano artistico paper - Medium depigmentation of first wash after the second has been laid. Sensitive to rubbing with brush. Clean removal of pigment.
- Sennelier surfaced sized, rough finish paper - Little depigmentation of the first wash after the second has been laid. Resistant to rubbing with a very small amount of depigmentation.
- Fontenay cold pressed paper - A large amount of depigmentation of the first wash after the second has been laid. Sensitive to rubbing with brush, much depigmentation.
- Arches cold pressed paper - Little depigmentation of first wash after second has been laid. Sensitive to rubbing with medium amount of depigmentation.
Jean-Louis Morelle, Large Oaks

Strictly speaking, this is not a wet-on-wet technique as the last dark strokes were applied when the paper was almost dry.
Style and approach

The first limitation of watercolour is having to leave uncovered those areas where we wish to create highlights, thus preserving the whites in a composition whilst we are working on it. This task of having to reserve areas demands much precision of movement and a certain amount of reflection before getting down to 'real work'.

The nature of water is, moreover, unstable and dynamic. It is absorbed, dries, exists in different states and glides over the slightest of slopes. These characteristics compel the painter to act quickly. The watercolour brushstroke acquires a definitive character the moment it settles on the paper. Once dry, it becomes almost irreversible. We can subdue it, but the paper will never regain its original purity beneath its layer of pigment. Consequently, the artist must both carefully consider his actions and retain his spontaneity. It is amidst this constant tension, this unstable balance, that the work of art will be born.

Philippe Mothe
Roll of Kraft on a Box

The preliminary study in pencil demonstrates how the painting will look, although it cannot guarantee that the watercolour will be successful. This is an adventure in itself with its own surprises, successes and pitfalls.
The sketchbook can buy the painter freedom. It is a useful companion, which enables you to make a start on more ambitious pieces work.

Where to start

The irreversibility of watercolour brushstrokes will obviously have a great influence on the way in which you set about painting a picture. The first actions cause the second, the third follows on from those before, and so it goes on. If things go wrong whilst producing a piece, it will be impossible to go back, to modify or to correct your painting. Nevertheless, do not tear up your work too hastily. Rather begin your composition on a new sheet of paper so that you can compare it with the first.

You can approach your picture in two different ways:

- The first involves applying the lightest shades initially and then organising your work so that you proceed from the palest colours to the darkest. Successive washes are a fundamental element of this approach, and should always go hand in hand with thorough analysis of whatever lies beneath the darker shades. How would the colour under the shadow look if seen at intensity? (See the chapter on colour, page 18.)

- The second approach is based on the use of an intense colour or a darkened value, which will sharply contrast with the white of the paper. This will provide a clear drawing of the picture and enable us to recognize the different sections of the composition. It is thus possible to set down the darker colours or hues immediately, and whilst this is risky, it can, at times, promote brilliance or freshness of tones. Areas of the picture can also be defined at the commencement of work by using lighter colours. In this last case, it is only once we have tested out the weak and mid values in relation to one another that the full strength of the dark values will be incorporated into the painting.

Empty spaces are generally painted before the areas that depict something material. This is a practice shared by the majority of painters. Out of context we have to forget the materiality of the object so that we only see it as a blot of colour that stands out from the background. In truth, whether you are concerned with the light on a vase or the space between two white porcelain cups on a blue tablecloth, you need, more than anything else, to concentrate on the hierarchy of the colours. Is the subject a light object that stands out from a dark background, or is it alternatively something dark on a light background?

The style of the picture will not only be the result of the techniques used, but also the keenness of your eye and the order in which you carry out the various actions.

Let us consider the work of two artists who feature in this book: Ewa Karpinska and Philippe Mothe. Each works in the wet-on-wet technique, removes pigment from their brushstrokes, reproduces halos and
combines dry surfaces with colour blends. Their work is, however, radically different. Ewa Karpinska lays down large, luminous bursts of saturated colour, reds in particular, whilst the coloured greys of day-to-day environment interest Philippe Mothe. Karpinska attacks her work head-on. Mothe sketches his composition in pencil before he starts painting. Other artists are more open to mixtures of techniques. Just as there are many different people, so there are many ways of painting. 'Become what you are' is still the key to every creative work.

© Jean-Louis Morelle, La Rue du Progrès
A mammoth task: painting the lights of the skyscraper and highlighting the car's bodywork by leaving reserves of white on dry paper.
Both skilful amateur painters and professionals of a high standard feature in this book. Watercolour painting is practised very widely despite its difficulties and a real void as far as teaching is concerned. This book is intended not only to be a tool, but also a testimony to the diversity of watercolour styles and individual artists.

**Gottfried Salzmann, New York, Towards the North**

Born in Austria in 1943, Gottfried Salzmann has lived in France since 1965. An artist of international reputation, he has created over a 30-year period an exceptional collection of works, which count amongst the most innovative of our time. Through his themes – town or country landscapes seen from the air – we are, at last, able to glimpse a face of modernity. The art of Salzmann is two-fold. He dislocates and builds at the same time. His compositional precision is implacable, but he allows pigment to move freely at its own pace. He sweeps the surface, re-covering it with a thousand mysterious patinas, unexpectedly adding a calm pool, which concentrates accumulated pigment at the edges of the paper.

Salzmann has moved from a love of the fields, trees and skies to one of towns, the second natural world of today. The solidity of his forms becomes liquid in glass and metal reflections. The silhouettes of buildings can either assert themselves or fade away into ghostly shapes. Salzmann therefore feeds our eye with paradoxical alternations for the sake of one thing alone: the very life of the painting. Watercolour is thus freed from all the prejudices of its short life and at last slots back into the place that it never should have left: that of a major art form.
Daniel Estrade

Reliquary for Exchange Currency
and Spirit Mortar

Daniel Estrade (born in 1954) is based partly in Paris and partly in the Pyrenees. Compared to the often dry style of the schools of hyperrealism and trompe l’oeil, his art confronts us with a radical difference: his subjects diffuse light. Estrade works with tiny drops of water and even uses a magnifying glass to remove any edge darkening. The watercolours are painted on vellum. The Vanuxem Gallery in Paris regularly exhibits his work, e.g. For a Herbarium of the Memory (1990), Sun bodies (1992), Theresa of the Earth, (1994), Water Lotus (1996), Mana (2000).
Born in Poland in 1962, Ewa Karpinska is a qualified landscape architect who teaches watercolour painting in the French towns of Champigny-sur-Marne and Saint-Maur-des-Fossés. Her work demonstrates her urgent need to draw merged with her love of landscape. Her paintings are characterized by very generous use of water: she observes large pools on her paper with infinite patience. Intense and pure, her colours blend to create perfectly crafted themes.
A Gérard Leserre
Morning by the Pond
Gérard Leserre was born in Paris in 1933. Having qualified as an artist at the School of Decorative Arts, he gave up his various positions as a studio manager, a graphical designer and an illustrator in 1980 in order to devote all of his time to painting.

Paradoxically, he was initially inspired to draw whilst working with lithographic crayon. He saw a deep black metamorphose into delicate shades of colours that had been superimposed on to one another by using printing. This opened the way forward to the transparency of watercolour and the instantaneity of its effects.
Annick Berteaux, born in Paris in 1951, is self-taught. She values exactness of detail and is particularly interested in the play of light and subtle combinations of complementary greys. She travels widely within France and Italy and collects intimist landscapes, which she paints from the subjects themselves or recreates in her studio. In 1992 she founded the Vincennes Watercolour Association, and she now teaches at the Youth and Culture Centre in Vincennes, France.
Born in Paris in 1937, Pierre Bergonhe studied at the Estienne School and the School of Applied Arts. Like a photographer, he creates snapshots. Speed is essential; the settings are straightforward and the brushwork energetic. Bergonhe is attracted by intense, well-pitched colour in immediately accessible tones.
Philippe Mothe

*Road Signs*

Born in 1956, Philippe Mothe is a translator. Watercolour painting has enabled him to build a bridge between favourite literary works - he constantly quotes Georges Perec, Jules Renard, Jacques Réda and Francis Ponge - and his own artistic pursuits. He draws his inspiration from the most ordinary places and objects, commonplace things, items which he euphemistically refers to as 'everyday rejects'.
Lélie Abadie

Red Knot

Born in Khouribga, Morocco in 1938, Lélie Abadie chose watercolour painting because of its transparency and spontaneity. The in-depth work that precedes the production of a piece and the different preparatory sketches fascinate her as much as the speed at which a painting is created. Her favourite subjects are imaginary scenes, gardens and, in particular, portraits. She lives, works and organizes training courses at Biscarrosse in the Landes region of France.

Jean-Louis Morelle

Nape of a Woman

Born in 1945 in the Oise region of France, Jean-Louis Morelle is qualified to teach drawing. After many years devoted to graphics and illustration, he turned to watercolour painting in 1989. His preferred themes are jumbled items in his studio, and light in the streets, the eyes and on the skin. His work is exhibited at the Ailtouarès Gallery in Paris.
Watercolour painting is not an art that is often pursued by forgers. It is easy to understand their reasoning. The very difficulty of managing water, of imitating the original instantaneous script produced by the actions of the artist, means that the work is unique and difficult to recreate. To reproduce pictures 'in the style of...' is no mean feat. Every painter who features in this chapter has taken pains to precisely describe the different stages of the development of a watercolour painting.

Having said that, reproducing their work faithfully is a challenge that is not easily met. Do not always try to create a perfect copy of the suggested model. No pool of water is like any other, no two pigment densities are exactly the same, and each halo maps out its own style. Gaining an understanding of the suggested steps is the only thing that matters. Make this the object of a study, of a number of attempts to grasp the essence of the picture. If you fall short at any stage, start again and, without any feelings of failure, examine your actions, as the artists in this chapter have had the patience to examine theirs.
Cans from the Studio

Philippe Mothe

Materials:
- 2B pencil
- Fontenay hot-pressed paper
- Brushes: large and small squirrel hair brushes
- Colours: gamboge yellow, Winsor's perylene maroon, Blockx magenta, Blockx blue

For the artist, emotions are born out of everyday items, banal things that are dismissed too hastily as valueless. These plastic jerrycans placed on old newspapers attract our attention because of their silent, modest presence. The gently harmonized colours give the scene an intimate character.

The very dense background of this composition is applied in two stages. The cans are painted in very weak values, and the sketches are drawn on dry paper. The painting brings a series of very different actions into play - a true apprenticeship for the watercolour painter.
Make a preparatory sketch in pencil, indicating the different values. This will act as model to show the colour tones of your composition.

Wet the surface of your paper generously and then apply your background, using a rather cool shade in a medium value, made from perylene maroon mixed with blue. The location of the cans will be blended into the wet surface.
Once the first wash has dried, paint in a second background, trying to create a strong colour tone from the very start. Before you apply this background, prepare your surface by covering your initial work with pure water (avoiding the area where the cans will be). Make a start on the warm shades of the foreground using gamboge yellow.

Now add detail to the pages of the newspaper on the ground. The grey tones of the texts and the photos are applied to a dry surface.
5
> When the paper is dry, work on the blends of colour on the surface of the cans, using two brushes at a time. Take care to preserve the patches of white and ensure that all the greys remain very soft.

6
> Finish the cans off by adding the labels and the caps. Strengthen the value of the gaps between the newspapers in the bottom half of the picture to regain the balance of the whole.
The charm of this subject lies in the sharp contrasts between shadow and light. Take care not to darken the shadow above the door too much, since this would make the whole of the foreground seem too dominant.

The pigments merge in large pools placed on dry paper, intermingling with the precisely structured drawings.
1  
> Paint the door using Winsor green mixed with a touch of gamboge yellow. Choose a very dilute colour, reserving the white of the paper in certain areas to suggest the light catching on the moulding. Use gamboge yellow and magenta for the wall. Mix magenta and Winsor green to obtain a tone similar to Payne's grey. Blend a few touches of transparent red oxide into your mix, which will be used to represent the stone material. The whole of the composition should remain very light.

2  
> With a very dilute Payne's grey, outline the arch above the door with a shadow. Lightly grey the area at the base of the wall and the top of the step. Mix enough gamboge yellow, magenta and cerulean blue phthalo to paint the wall in the foreground, the ground and the arched area above the door opening. The curve of this arch and the depth of the wall on the right should remain very light.
As you continue working, do not view each element in isolation but in relation to the whole of the picture and the role it will play in the contrasts that you wish to create. The difference between the darkest and lightest sections in the foreground should never appear stark. Take pains to really define the surfaces of the doorframes and the depth of the walls, whilst hinting at mottling and imperfections in the stonework. The red oxide aptly suggests changes in the colour of the walls. Refraction causes all of the shaded areas, including the arch above the door, to receive some light as it falls to the ground. As a result the higher parts of the wall will be the darkest.

Define the sections of the door using light and shadowing effects. Use Winsor green once again in a variety of densities, ensuring, however, that you attribute the same value to each relief, indicating the impact of the sun on the surface of the wood. Look out for any shadows that are cast. These will be applied at the last minute and will reinforce certain details. Observe the symmetry of design on each panel. Finally, add the shadow cast on the upper part of the door, possibly darkening the lower sections of the areas that project outwards.
Boats on a Pond

Materials:
Arches paper
HB pencil
Brushes: medium and large squirrel hair brushes,
Kolinsky sables nos. 2 and 3
Colours: aureolin, permanent magenta,
Rembrandt's transparent red oxide, Rembrandt's cerulean blue phthalo,
Winsor green, Payne's grey, magenta

There are two dominant characteristics in this subject: the pinkish light in both sky and water, and the grey–green shade in the background vegetation and pond reflections. A slightly misty atmosphere, reminiscent of early mornings in winter, pervades the whole picture. In this composition the artist is using techniques for dry paper and then for partially wet paper.
Sketch the composition in pencil and then dampen your paper using pure water. Once the paper has regained a matt surface, cover it completely in a very dilute mixture of aureolin, magenta and a touch of transparent red oxide. Whilst it is still moist strengthen the pigment on the lower part of the background with a gentle Payne's grey, heightened with a touch of cerulean blue phthalo. Apply this mixture, working from side to side, going from left to right and then from right to left.

With a shade of terre-verte made from red oxide, cerulean blue phthalo and a touch of magenta, paint the background vegetation and the upper part of the pond using large strokes. Do not show the boundary between the trees and the water. Vary brush size to accommodate the different levels of intensity, reserving some of the pink background. Keep the colour tones close to the boats very soft.

Ensure that your paper remains damp. If it does dry, check that it is completely dry before wetting it once again with pure water. Shape the vegetation, strengthening the pigment in certain areas with a shade of terre-verte, darkened by the blue and Payne's grey. Ensure that the silhouette of the trees and the area where the bank meets the pond remains blurred. Work with small vertical brushstrokes. Paint the boats with a mixture of magenta, blue and transparent red oxide. Reserve some distinct patches of light on the edges and the seats. Intensify the colour backlit areas.
Now bring the water to life with carefully placed reflections. Mix Winsor green and magenta, taking care to really dilute the colours. Begin at the base area of the central mass of trees, your touch becoming lighter as you grow closer to the edges of the paper. Space and lighten the reflections as they get nearer to the observer. In the final instance, accentuate some areas of the boats and their reflections to emphasize (although not excessively) a few small details.
Here is an example of a combination of dry surface techniques (the boat in the foreground) and the wet-on-wet technique (the sky) by the same artist. Note the depigmentation of the architecture and the fine mood caused by backlighting on the gondola.
Peaceful Street

Materials:
Zanders parole paper
2B pencil
Brushes: small, medium and large squirrel hair brushes, small hog bristle brush
Colours: aureolin yellow, Rembrandt’s transparent red oxide, Winsor’s permanent rose, Blockx blue, Blockx magenta

A few blots of colour on damp paper may suffice to conjure up a street beneath the yellow lamps of the night. You need to have acquired a lot of skill to successfully recreate this very man-made vista. Practise beforehand using the exercises suggested in the chapter on wet-on-wet techniques (pages 40–45). Certain areas of the composition are re-moistened to enable colour blends to be superimposed on to the surface. Therefore, choose a paper that does not lose pigmentation following a succession of washes.
Sketch the composition in pencil to immediately indicate the location of the shaded areas and lights. The preliminary sketch lends structure to your vision, although this will change in the course of painting, sometimes because of deliberate simplifications, and sometimes due to the water's own energy and the fusions that this will create.

Soak the surface completely. Wet through, the paper should have a moist but matt surface. Do not be afraid to release drops of dense pigment: a mixture of blue and red oxide for the dark blue colour, and a mixture of aureolin, permanent rose and a touch of red oxide for the yellow lighting. Do not load too much water on to your brush as the paper is already saturated. Very quickly indicate the layout of the whole composition, avoiding blue tones which are too distinctive.

(Detail) By reproducing halos, remove the pigment at the points where the cars, house windows, pavements and electricity pole would be. Highlights will thus be included in the picture before the subjects are even painted. To depict the lighting from the street lamps, release some drops of pure water. Immediately lift out any excess water to prevent feathering.
Use the wet-on-wet technique for the work on the roadway and the right-hand pavement, which are, in part, reproduced by applying pure water to the area. When the surface becomes matt, add a little more pigment and paint to the horizontal lights on the roadway by adding halos. Once the paper is dry, draw out the dark electrical cables with a very fine squirrel hair brush.

If need be, dry the surface with a hair dryer. Apply a very liquid mixture of blue and red oxide to the roof of the house. With the help of a second brush that is full of water, sweep across the surface above the roof until you come into contact with the blue and red oxide mixture whilst it is still wet. This blend of colours should be extensive and the pigment will bleed upwards. Draw in the softer lights above the house, producing two halos on the surface whilst it is still damp. Hint at the buildings in the background and the left pavement. Paint in the cars. Keep a firm eye on the elements that are meant to remain distinct and those that are meant to be blurred.
Using the same method, strengthen the pigment on the right-hand side. Work around the contour of the roof and reserve the electricity post and cables. Complete the drawing of the pole and the right pavement using two brushes together to retain sharp edges and to instantaneously fuse colour in the desired areas. Darken the colour of the cars with a mixture of magenta, Blockx blue and transparent red oxide. Accentuate the light at the end of the road by rubbing the paper gently with a small hog hair brush and then spreading an orangey mixture made of aureolin and permanent rose on to the lightened surface.

\( \text{(Detail) Once again, accentuate the contrast between both the tree and the roof of the house to the left with the light-coloured wall. Recreate a wet area above the house. Work from the top down, making sure that you do not apply water beyond the lines of the roof, and reserve the chimneys. Strengthen the pigment in this area using a mixture of red oxide, magenta and a touch of blue. Take care to ensure that the rooftops merge smoothly into the sky. Once the roof is dry, wet the left side of the painting using clear water, taking care to include the light wall of the house, spreading your pool towards the bottom. Now strengthen the pigment in the vicinity of the tree with a gentle mix of blue and red oxide.} \)
Butterfly Nude

Materials:
Fabriano paper
HB pencil
Brushes: small, medium and large squirrel hair brushes
Colours: Winsor's permanent rose, aureolin yellow, Blockx blue, Winsor & Newton's ultramarine blue, perylene maroon, gamboge yellow, Rembrandt's transparent red oxide

Precision is essential when depicting the movement of the arms, shoulders and pelvis of this prone body. In actual fact it is pointless to continue if the drawing lacks balance at the start. The strokes were designed as a series of thin glazes in coloured greys which are intended to intersperse the flesh tints with brief snatches of light.
1

- Draw the layout in a very fine pencil line. Begin by shaping each section of the body with a mixture of aureolin yellow and permanent rose, darkened with a touch of perylene maroon and ultramarine blue. Remember to reserve snatches of light. Starting from the centre of the head, outline the roots of the hair. Draw the line of the body in the background using a very gentle wash made from ultramarine blue, Blockx blue and a touch of perylene maroon. Do not be afraid to cover the pelvis again, to accentuate the contrast with the shoulders.

2

- By using two brushes together (one for the colour and the other for pure water), reinforce the shape of the model’s buttocks and arms and the hollow of the shoulders. Darken the blue area above the left shoulder.
Using a glaze of Blockx blue and transparent red oxide, separate the outline of the body from the background. Deepen the blue spot above the shoulder and darken the right side of the hair using a shade made with transparent red oxide and ultramarine blue. Remember to retain the blurred edges between the hair and the bottom of the picture. To preserve the undulating movement of the shoulders, do not place too much emphasis on the forearms.

Paint the background with another very light glaze, this time covering the pelvis, and again emphasizing the contrast with the shoulders. On dry paper, using two brushes together, draw the arms and shoulders with a mixture of warm strokes made of perylene maroon, a touch of gamboge yellow and permanent rose, and cold strokes mixed with Blockx blue, ultramarine blue and a touch of perylene maroon. Take care to reserve the patches of light on the limbs and the area beneath the right armpit. Arrange the sheets on the bed, once again paying particular attention to the light effects.

Dampen the surface of the paper and draw the shape of the hair. Mix gamboge yellow with a little perylene maroon and permanent rose for the warm colours and Blockx blue and ultramarine blue for the cold colours. Use a relatively dense, virtually undiluted pigment. Lighten a few strands by removing some of the substance before it is dry.
Once again, cover the background of the composition, some areas of the body and the foot of the bed with another glaze made of Blockx blue and a touch of perylene maroon. Spread this glaze, ensuring that it remains cohesive, taking care to reserve the brief bursts of light on the shoulders, forearms, around the right armpit and on the hair. To tone down the density on some areas of the body, lift out the fluid using the tip of the brush whilst the wash is still damp. The success of this watercolour is dependent on the thin transparent layers overlaid on to one another, as well as the subtle variation between warm and cold colours.
**Young Girl Sleeping**

Jean-Louis Morelle

**Materials:**
- Fontenay paper
- HB pencil
- Brushes: small and large squirrel hair brushes and cat's tongue synthetic brush no. 2
- Colours: aureolin yellow, Winsor's permanent rose, Rembrandt's transparent red oxide, Blockx blue, Blockx magenta, sap green, Winsor green, perylene maroon

This subject is initially handled in a wet-on-wet technique but during the final phase details and contrasts will be added using a dry surface technique. The colour blends covering most of the paper will be lightened by halos, which reveal the whites of the face and the glints of light on the hair. Right from the beginning, the presence of the subject is clearly expressed within a cohesive unit of light.
Using an HB pencil, lightly sketch in the face, the hair and the profile of the model. Mark out those areas of the paper that definitely need to remain free of paint: the arch of the eyebrow, the eyelid, and the space between the eye and the bridge of the nose and that between the arm and the forearm. Using pure water, wet the surface of the paper completely, only avoiding the four patches of white, which, by their sharpness, will starkly contrast with the softness of the colour blends. After this gradually add pigment to the composition.

Lay the first wash for the flesh tones (a mixture of aureolin yellow and permanent rose broken by a hint of sap green) and the surrounding grey areas (for the higher area add Blockx blue to a transparent red oxide, which has been heightened with a touch of permanent rose, and for the bed and the torso mix Blockx blue with some perylene maroon and a hint of sap green). Do not be afraid to merge colours, but drop pure water on to those areas, that are to be the lightest (the face, the shoulders and the breast). Use the tip of the large brush to absorb the pure water: the paper will never regain its original purity but the shade will be extremely soft. Repeat the procedure if you do not think that the colour is distinctive enough, once again dropping water on to the surface, then lifting out the excess.

For the hair, which is painted on to a matt surface using a brush containing very little water, mix perylene maroon into some magenta. Add sufficient sap green so that the shade can develop, from broken green to purple, after this adding some Blockx blue for the deepest shades. Lighten certain strands by causing halos to form. Absorb the water and then repeat the operation several times, shaping the halos. Allow to dry.
The abundant water causes edge darkening around the small patches of white. Dampen the edges with large drops of water. Wait for a few seconds and then, after rubbing the area gently with a squirrel hair brush, lift out the excess liquid. The darkened edge should have disappeared. Once the paper is dry erase the pencil marks.

Shape the parts of the face (the arch of the eyebrows, the nose, cheek, lips, forehead and eyelashes) using permanent rose and aureolin yellow, at times made slightly blue with a hint of Blockx blue, at others greenish by adding sap green. Remove pigment from the damp strokes to soften them.

Dampen the outline of the forearm and arm with pure water. Using a grey-blue wash made from Blockx blue and a hint of perylene maroon, paint in the forearm and then the arm. Develop the shade with a touch of permanent rose. On a matt surface, darken the shadow on the forearm with some sap green broken with a little perylene maroon. This moist area on the forearm is blended into two grey-blue pools applied to the sheet. At the last moment draw in the line of the arm with the end of a small brush that has been pinched dry and loaded with a little perylene maroon. Accentuate the fold of the elbow with a slightly violet stroke, mixed with Blockx blue and permanent rose, broken by a hint of yellow.
Using a subtle, slightly mauve wash, strengthen the colour of the sheet on the bed. Accentuate the shadow under the armpit and the breast. The line of the back was initially too low and the artist has replaced it by extending the line of the hair, adding pigment to the surface (using sap green broken by perylene maroon). When the paper is dry, work on the dark strands of the hair using perylene maroon mixed with magenta and sap green. Partially blend in your strokes with the help of a slightly wet second brush used side-on. Draw the strands on the middle of the back. Lighten some curls on the forehead, partially wetting the area and then lifting out the original pigment with the excess water.

To finish off, accentuate the shape of the face with a mixture of permanent rose and aureolin yellow made slightly blue with Blockx blue, or slightly green with sap green. Gently intensify the flesh tints of the lips. Sharpen the contrasts between the triangle of the bed, the face and the arm, and darken the hand close to the forehead.
Dry paper is used for this painting. The secret of creating this piece lies in liberal use of water. Large drops of pigmented water should not scare you! When you paint the red fruit, the whole surface of the brushwork needs to be shiny and remain damp for a long time so that it can be topped up with a second application of denser pigment later. Work around the gleaming spots on the fruit to reserve them. The pigments are thus suspended in the water, which will enable them to mix with one another.
1

Each colour tone should be laid down in its most intense form at the start. Paint the fruit in an orange made from gamboge yellow and a little of Winsor’s permanent rose. Use an intense red for the darker parts mixed with a little gamboge yellow and the Rembrandt violet. Prepare an olive green using gamboge yellow, Winsor’s permanent rose and Winsor green. Before the fruit dries, lay a second wash beneath it in a yellow-green made from gamboge yellow, the olive green colour and a Rembrandt blue. Blend this gently with the red.

2

Once the surface begins to dry, lift out the pigment around the patches of white on the fruit with the tip of a brush. Open up a light area between the two fruits on the bottom right whilst the surface is still wet. Paint the wash at the top with a very dilute mixture of orange (Gamboge yellow and Winsor’s permanent rose) and the Rembrandt blue. To depict the leaves in this new wash whilst still very wet, apply a mixture of orange and Winsor green using a brush that is almost dry.
Paint the leaves in quite dense shades (orange and green), allowing the colours to blend into the wet brushstrokes. Draw the veins whilst the surface is still partially wet using concentrated gamboge yellow. Remove pigment from the veins of the lowest leaf with the slightly moistened tip of the brush. If there is excess water, lift it out immediately, having pinched the tip of the brush beforehand.

You can now work on the lower area of the composition. The quantity of water remains the same. Begin by painting the leaves on the dry surface using a very soft shade. Apply dark pigment to different areas: pigment will stay suspended in less dilute liquid and will disperse naturally.
Lay an extremely soft greenish–yellow wash on the left of the composition. Retain several of the reserved white highlights to suggest the reflections on the leaves. Using quite a concentrated pigment, draw the leaves and fruit whilst the surface is still shiny. Their shapes will spread out and blend, subtly suggesting distance. If you tilt your paper diagonally, and if you have painted using a sufficient amount of water, you will be able to retrieve a drop of water in the left corner of the paper that you can lift out with the tip of a large brush.
Materials:
Fabriano paper
Brushes: squirrel hair brushes of different sizes
Colours: sap green, Naples yellow, Winsor green, phthalo blue, gamboge yellow, quinacridone rose, perylene maroon

This painting is a festival of intense colours that are applied almost in their pure form within a layer of water. It displays the light filtering through the foliage and catching on the wire of the fence and the delicate petals of the lost rosebush.
Wet the paper liberally, reserving the spaces for the rosebush at the centre, the wire and the posts of the fence. This stage is long, as you need to be very meticulous. It would have been half an hour before the artist was ready to put brush to paper! Slightly raise the top of the support, as the work should be painted from the top down. First apply the blue colour tones: phthalo blue, green-blue (by mixing phthalo blue with sap green) and plum (by mixing phthalo blue and perylene maroon), and intensify them gradually. Then apply an orangey yellow (mixed from gamboge yellow and quinacridone rose). By tilting the paper, the pigment bleeds towards the bottom. When the top of the paper becomes matt, add the orangey yellow to the dark colours.

Wait until the bottom half of the paper is partially dry before you start drawing in thick pigment and creating more precise colour blends. Use halos to open up several light areas on the clumps of grass situated to the right of the rosebush. Sketch out the perspective of the path in Naples yellow, quinacridone rose and sap green. Apply a very dense mixture of phthalo blue, perylene maroon and Winsor green beneath the rosebush.
When all of the paper is mat, arrange the whites that correspond to the area of light between the fence posts by creating halos and immediately lifting out the excess water. Draw the grass in the foreground in the same way, using a very fine squirrel hair brush containing very little water. A small deposit of pure water and yellow pigment in the midst of the roses establishes a link with the background. Make a start on some of the leaves and stems of the rosebush using a mix of quinacridone rose and sap green.

Draw the foliage close to the left-hand edge of the watercolour, laying a very soft wash on the dry paper. The water should scarcely be stained. Intensify the wash slightly to indicate the leaves placed around the rosebush's flowers and the grass at the foot of the fence.
Soak the dry surface once again. Remove a little pigment from the dark areas at the top and centre of the watercolour by gently rubbing the surface with a large squirrel hair brush, which will lighten it.
The most difficult aspect of this painting is conveying the backlighting as it filters through the leaves, fruit and glass dish. The different contrasts thus need to be painted with exactness and precision. We also need to estimate the distance that pigments travel when colours bleed into a wet surface and it is therefore essential that we apply them to a more restricted area than the one that they will eventually occupy.

Paradoxically, the work will begin at the centre of the painting. We will move from the top to the bottom of the composition using a moderate amount of water.
1

The colours should be blended in a controlled manner. Indicate the shadow on the upper leaf in a Winsor green with gamboge yellow and a touch of permanent rose. Its colour tone is close to sap green, although it is more transparent. Draw the two leaves side by side with two completely divided strokes, ensuring that the colours have not been in contact with one another before application. One should be in a greenish yellow (gamboge yellow with a touch of Winsor green), the other close to sap green. Bring the two greens into contact at a fairly late stage so that they fuse gently. For the fruit, apply divided brushstrokes made from permanent rose mixed with perylene maroon.

2

Draw the veins of the leaves in a dark green made of Blockx blue and gamboge yellow, Winsor green and a little permanent rose. On a matt surface, using water that has been stained with gamboge yellow, draw the light veins on to the leaves using halos. As the matt phase is drawing to an end, begin the process of bridging the divide between the strokes by passing the damp tip of the brush between the leaves and the red of the fruits. Keep the outline of some of the leaves sharp. Dry the composition.
Work on the leaves on the right-hand side, beginning with the higher ones. Liberally wet the entire bottom half of the picture, leaving a white chink of dry paper around the surface of the leaves that have already been painted, but which are still wet. Immediately add some fairly liquid pigment to create large areas of blending. Tilt your paper downwards slightly. Place some traces of golden yellow (a mixture of gamboge yellow with a touch of permanent rose) on the left-hand side, an orangey colour in the centre and mauve on the right (by mixing Blockx blue and permanent rose).

On a matt surface, using the same thick colours, draw the glass dish in mauve, then warm the shadow of the fruit using an orangey colour. Paint the shade of the leaves on the right by passing a brush that has been pinched dry over the white gap, which has been reserved until this point. Paint on the redcurrants that are on the outside edge of the dish, using a mixture of perylene maroon, permanent rose and a little yellow. Dry with a hairdryer.
Prepare the upper half of the picture with pure water, very carefully working around the edges of the tiny areas of light on the fruit and the stems. The fruit is painted with a very wet pigment created by mixing three different combinations of gamboge yellow and permanent rose: one portion of orangey red, one of mid red and one of dark red (darkened by adding violet). Keep the paper tilted upwards. Create the colour for the background using Blockx blue and perylene maroon. Settle the blending by lifting out liquid and by then adding pigment using a few touches of permanent rose. Finish off by adding some small brushstrokes to the branches to make them thicker.
Materials:
Fabriano paper
Brushes: large and small squirrel hair brushes
Colours: sap green, Naples yellow, gamboge yellow, Blockx green, perylene maroon, quinacridone rose, permanent red, Blockx red, Blockx blue

Poppies

In this watercolour the slender delicacy of the stems is in direct contrast with the strong and vivid character of the flowers. The shapes, the values and shades intermingle. Nevertheless, although work on these different areas must remain separate, it is essential to preserve the unity of the whole. The reserved areas on the stems will often act as aids, helping you to spread the blends from one area or another during the different stages of work.
1. Sketch out the composition using the brush tip, which is loaded with a very dilute watercolour. Tilt the paper diagonally from top right to bottom left. Firstly draw the petals of the flowers in Blockx red, using divided brushstrokes that are both very shiny and very fluid. A divided brushstroke is a stroke that has been fed both a lot of pigment and a lot of water, and is separated from its neighbour by a gap of dry paper. Begin the background using a mixture of very pale Blockx blue, sap green, Naples yellow and gamboge yellow. Paint on to dry paper using small divided brushstrokes.

2. Wet the paper liberally with clear water, reserving the two small patches of white, which will enable us to differentiate the shape of the vase from its shadow. Whilst waiting for the surface of the paper to become matt (although still wet), strengthen the colour of the background using sap green darkened with perylene maroon. Then, using a thick mixture of perylene maroon and Blockx blue, draw the shadow of the vase and flowers on the ground.
3

Continue blending the poppies, preserving the central flower. Paint the central part of the flower in a very dense Blockx blue. Using pure water, draw in some stems and spaces for buds using the halo effect. Dry with a hair dryer.

4

Prepare the top left area in pure water, reserving the stems. Paint the flowers and their centres using divided strokes. Apply Naples yellow mixed with gamboge yellow and a few touches of sap green and perylene maroon to the damp area of the background. Allow to dry. Keep working on the flowers until they are finished, bleeding them on to the paper whilst its surface is still matt and damp. Create areas of light on the edges of the petals, lifting out the pigment with a fine squirrel hair brush. Paint the centres of the flowers and then dry.
Wet the central area with pure water. On the damp matt surface hint at a few stems and leaves by skimming the paper with the tip of a brush loaded with a thick mixture of Blockx green, Blockx blue and quinacridone rose. The effect should be blurred. Also paint the flower at the centre of the bouquet. Work on the vase, using perylene maroon broken by blue. Paint the dark stems with quite a fluid mixture of sap green and perylene maroon. Dry the whole picture.

Prepare the lower left area with pure water. Using a very dilute mixture of sap green and perylene maroon, hint at the diagonal shadow. Paint the remaining stems on to a dry surface using a mixture of sap green, perylene maroon and Blockx blue.
Watercolour Painting

Watercolour is the most popular of all the painting and drawing methods. Once you have understood the basic principles of working with water, colour and light, a whole range of creative effects can be achieved. *Watercolour Painting: A Guide to Techniques and Materials* is a comprehensive and practical guide for beginners which explores all aspects of this medium, from preparing your surface and choosing the right brush to creating mists and colour blends, glazes and flat washes. Simple exercises help explain the techniques, while a selection of paintings are broken down into step-by-step stages to provide further inspiration. A special gallery section looks at work by other watercolour artists, illustrating the variety of results that can be achieved through this wonderful art form.

Fully illustrated with colour photographs throughout, as well as step-by-step artworks and diagrams, this is an essential book for anyone taking up this popular and immensely satisfying art.

Born in 1945 in the Oise region of France, Jean-Louis Morelle regularly exhibits his watercolours at home and abroad and has taught watercolour painting for many years. He has a studio in Montreuil-sous-Bois, France, where he wrote this book.