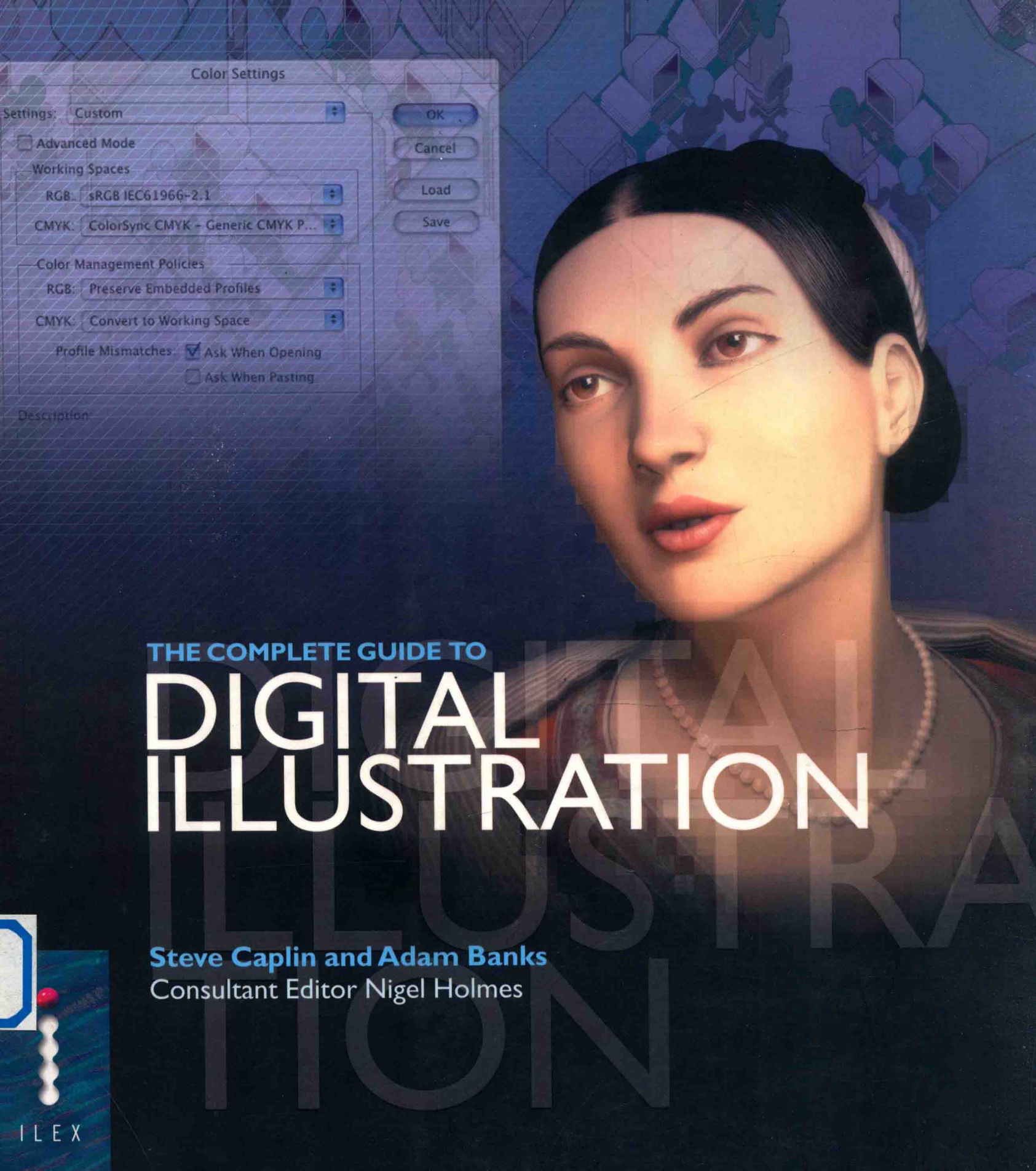

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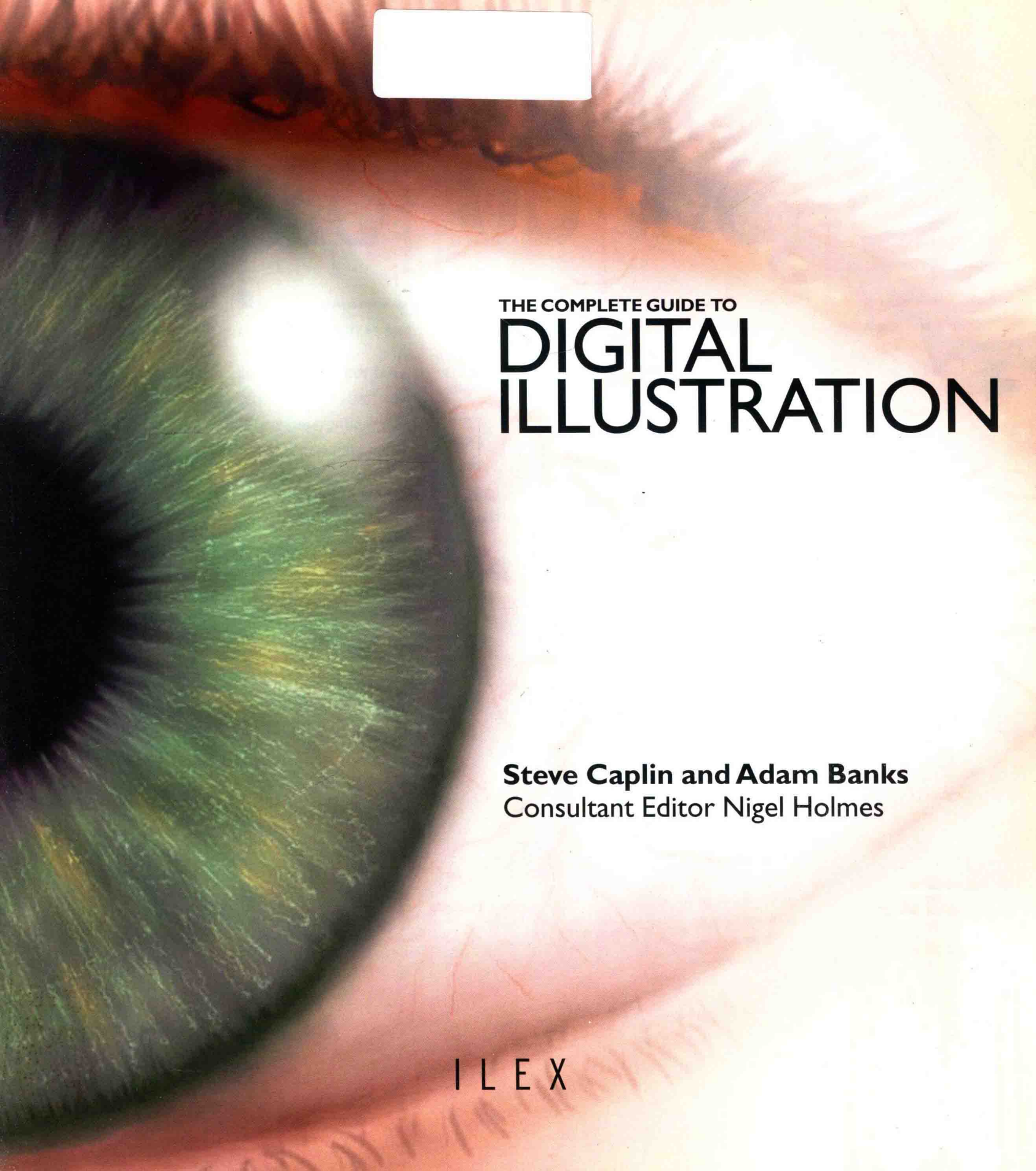

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First published in the United Kingdom in 2003 by
Ilex
The Old Candlemakers
West Street
Lewes
East Sussex BN7 2NZ
www.ilex-press.com.

This book was conceived by
Ilex
Cambridge
England

Publisher: Alastair Campbell
Executive Publisher: Sophie Collins
Creative Director: Peter Bridgewater
Editorial Director: Steve Luck
Design Manager: Tony Seddon
Editor: Stuart Andrews
Designer: Jonathan Raimes
Development Art Director: Graham Davis

British Library Cataloguing-in-Publication Data
A catalogue record for this book is available from the British Library

ISBN 1-904705-00-6

Printed and bound in China

For more information on this title please visit:
www.cgdigitalillustration.com

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CONTENTS

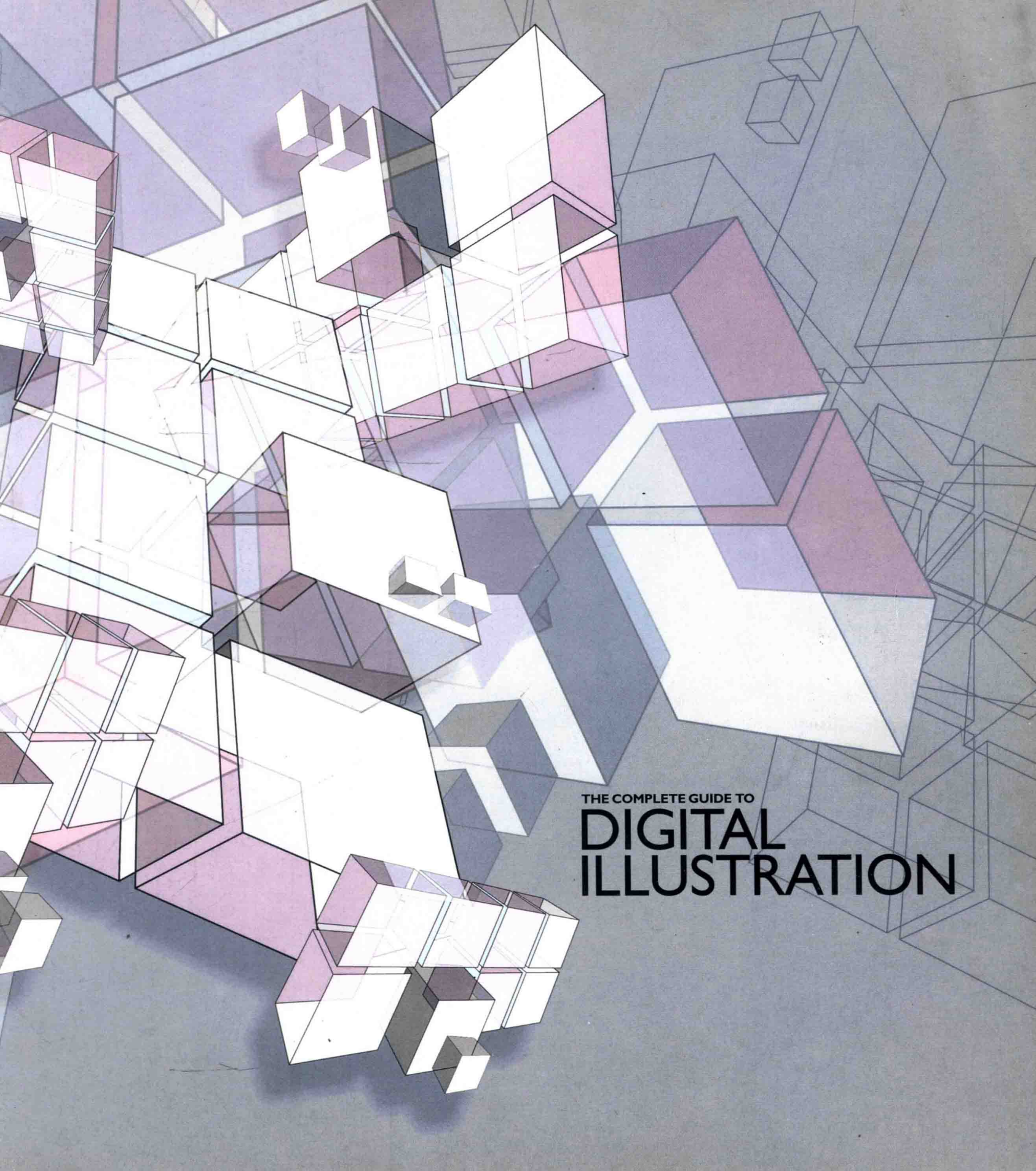
03

04

05

06

07



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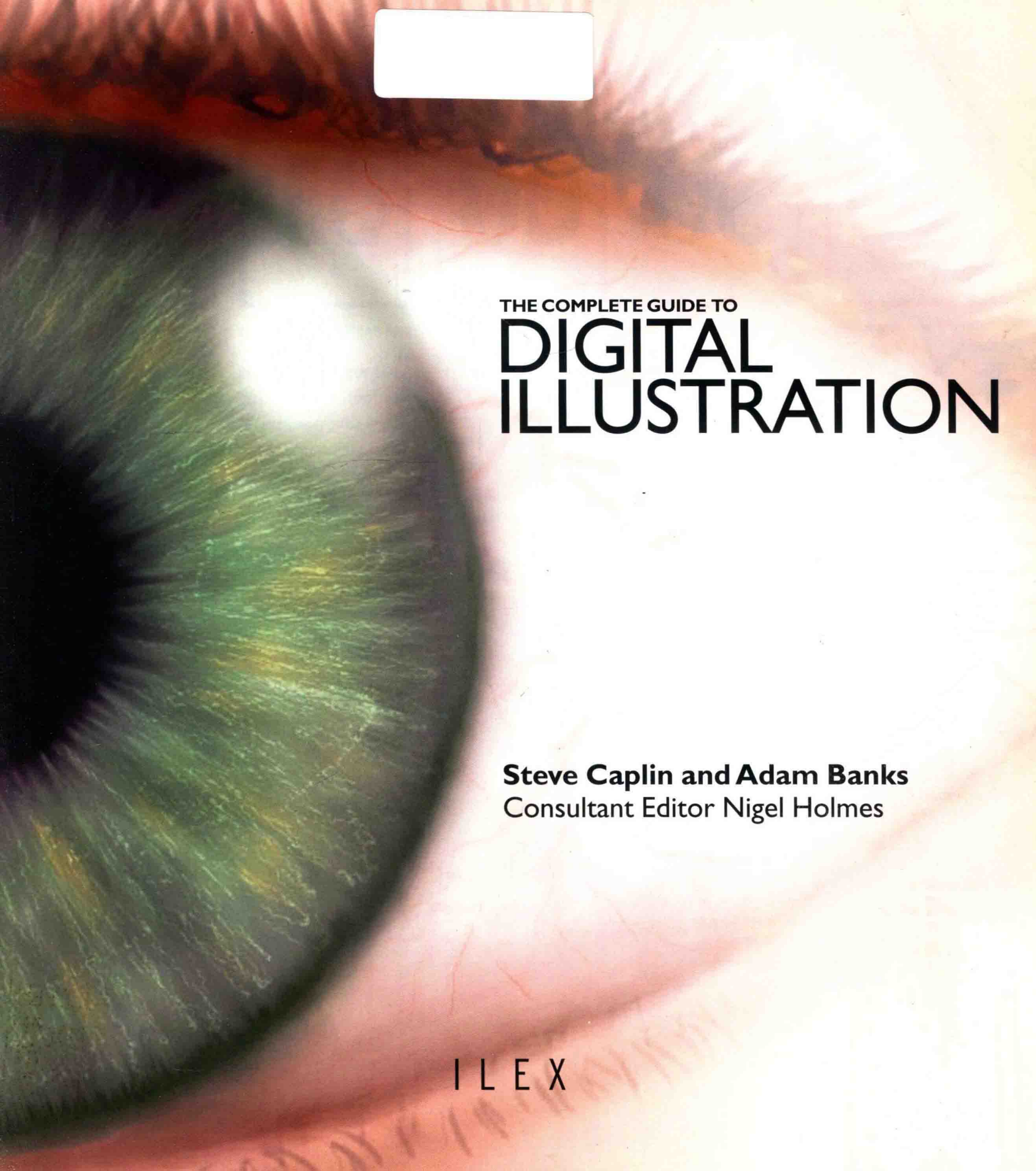

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INTRODUCTION

This book is about a revolution, and how to join it.

Until a few years ago, computer-generated art was not much more than a collection of slick, machine-made images. They were images that lacked any human interest, where everything looked pretty much the same; it was the only look that the available programs could produce. At first the novelty of this new form of image making was intriguing, but it wasn't long before it soured into cliché. When I saw my twentieth draughtboard grid stretching far away into the Dali-like landscape, reflecting the realistic clouds floating above it, I was sure that this medium was stuck in some kind of art hole where imagination doesn't get much play.

But the fascination with easy effects went away as the technology grew up. Technology started to listen to artists and designers; it invited them into software development discussions alongside the amazing engineers and programmers who had previously held sway over what a computer application of this sort could do.

In time, artists passed into a second era of digital image making: simply put, we made computers do what we wanted them to do, not what programmers suggested we do.

Now we've progressed to another stage of digital illustration: an era that I would not have thought possible those few years back at the clichéd dawn. This one is a revolution.

Throughout history, advances in technology have made complicated tasks easier to do, and in some cases they have enabled whole new areas of art to exist. Before the late 19th century, artists could make sketches outside, but needed to return to their studios to paint. The reason was very basic – the amount of paint needed for a day's work would dry up in the open air. As artists had to mix a new batch every day, this made painting outside of the studio impractical. This all changed with the simple invention of small metal tubes to hold the artists' colours: a seemingly insignificant advance, but one that enabled the early Impressionists to go outdoors to complete whole canvases. The change of tools was simple, but the effects changed the face of modern art.

Now computers, often derided as no more than a clever tool – especially in the context of art and design – are giving artists and designers actual ideas as well as new ways to draw them. That's a very different order of change from the way painting changed back in the 1870s.

Many of us have clung fiercely to the notion that the content of an illustration, diagram, painting or animation is the most important part of it, and that the way the content gets onto paper, electrons or film is secondary. Craft is good, and style is good, and balance and aesthetics are good, but they pale next to the idea behind the work. I think that we're finding out that a 'mere tool' is making more of a contribution than we thought, and that there's some rethinking to do – and some respect to dole out, too.

Why do we want to create images that are, say, indistinguishable from photographs? Forget the 'photograph'. Nowadays it's just another word for an image. All images are images, however they are produced. The documentary nature of photography – the idea that the camera never lies – was debunked long before digital manipulation was possible. The techniques of manipulation were clumsier, but they still existed.

From cave painting on, image making has followed technological advances and will continue to do so. Digital illustration is a way to make pictures. But this time technology does more than simply enable the artist to create startling, funny, informative, beautiful images. This time the power of computing itself – the speed of the machine together with the sophistication of the software – is making more than a 'mere tool' contribution.

Have you ever been working at your computer and realised that you never would have thought of drawing such-and-such a thing before? Do you begin to realise that the very means of producing the piece suggests answers to the design and illustration problems inherent in it? It's not the same as having an idea in mind but not knowing how to execute it. And it's not the same as finding a cute filter or effect that will dress up your idea, or make it shine that little bit brighter. At what point can you say that the computer is contributing to the art? Yes, you are operating the machine, but it in turn is working with you. It's the tip of artificial intelligence.

This book will take you on a learning journey into this revolutionary new world. Here is a clearly delineated, step-by-step look at every aspect of digital illustration and how it's done. Digital painting, drawing, 3D illustration and animation are examined and then showcased with portfolios of amazing examples. Many of these images were unachievable – in fact would have been unthinkable – before the new revolution.

Now we've progressed to another stage of digital illustration. An era that I would not have thought possible those few years back at the clichéd dawn. This one is a revolution.

Nigel Holmes is the former Graphics Director of *Time* magazine

THE BASICS

01

01.01

Buying your first computer, or choosing the best software and applications for an existing one, can be a daunting task. But it does not need to be. Whether you opt for a PC or an Apple Macintosh, there's no need to understand all of the jargon; a basic comprehension of the hardware and the demands of digital imaging will suffice. The same goes for buying a scanner, printer or digital camera. It doesn't get any more complicated when you come to choosing software. If you already know what you are trying to achieve, the information in this chapter should point you towards the right application for the job. If not, then you should get a few good ideas. Above all, there is no need to spend huge amounts of money on digital illustration – though if you have the cash to spare then there is plenty of opportunity to do so!

WHAT YOU'LL NEED

Buying a computer is your first step into digital illustration. Current models fall into two categories: PC or Apple Macintosh. They have similar capabilities, but inherent technical differences limit the choice of software and add-ons.

Macs are the standard choice for professional graphics users, having been developed with this task in mind; you will see them in most design studios, advertising agencies and publishing houses. However, they are less popular as general-purpose machines, as they tend to be slightly more expensive than PCs and offer a smaller choice of office and leisure software. On the other hand, PCs can be more difficult to use and maintain, partly because they are governed by complex standards and built by many different manufacturers. Macs are made by only one company, Apple, which can therefore manage their specifications in a more straightforward manner.

The Apple Macintosh range, including the iMac, is a long time favourite of digital artists, having played a central role in the development of professional computer graphics both in print and multimedia.
Picture: Apple Computer, Inc.

The essential components of any computer include a processor, memory, a hard disk and an operating system. The processor is the brain of the machine – while you are working, there will often be short delays as the computer catches up with what you are asking it to do, or 'process'; a faster processor means less waiting. Computer adverts often quote processor speed, which is measured in megahertz (MHz), as an indicator of performance, but it is not a comprehensive arbiter. There are vast differences between the technology at work in the Motorola G3 and G4 processors used in Macs and the Intel Pentium 4 and AMD AthlonXP processors used in PCs, meaning that a direct megahertz-to-megahertz comparison will not accurately reflect the speeds involved.

Overall speed is also affected by other components in the computer system. The graphics card, which helps drive the screen display, is a prime example, particularly when it comes to intensive 3D work. Look at reviews in computer magazines for more meaningful performance ratings of different models.

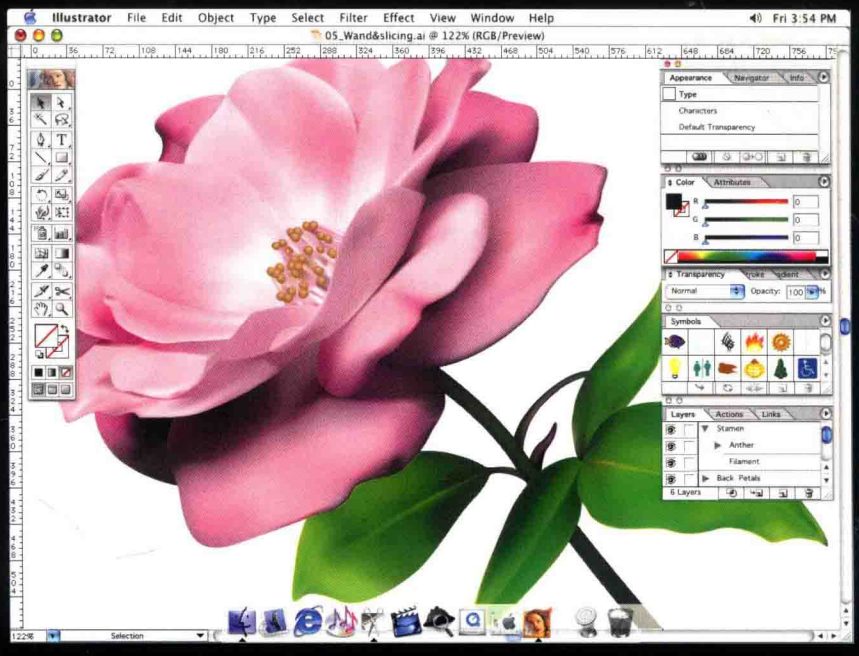
While you are using a particular piece of software, or 'application', such as Adobe Photoshop, both the application and the data it is working on – for example, your illustration – are stored in the computer's memory. This consists of banks of silicon chips, and is known as 'random access' memory (RAM) because the processor can quickly get information in or out of any part of it at any time. When the computer is turned off, however, everything in RAM is lost. So applications and data are stored permanently on a sealed mechanical device, called the hard disk. This is why you must remember to save work at regular intervals, which is the process of copying it from RAM to the hard disk.

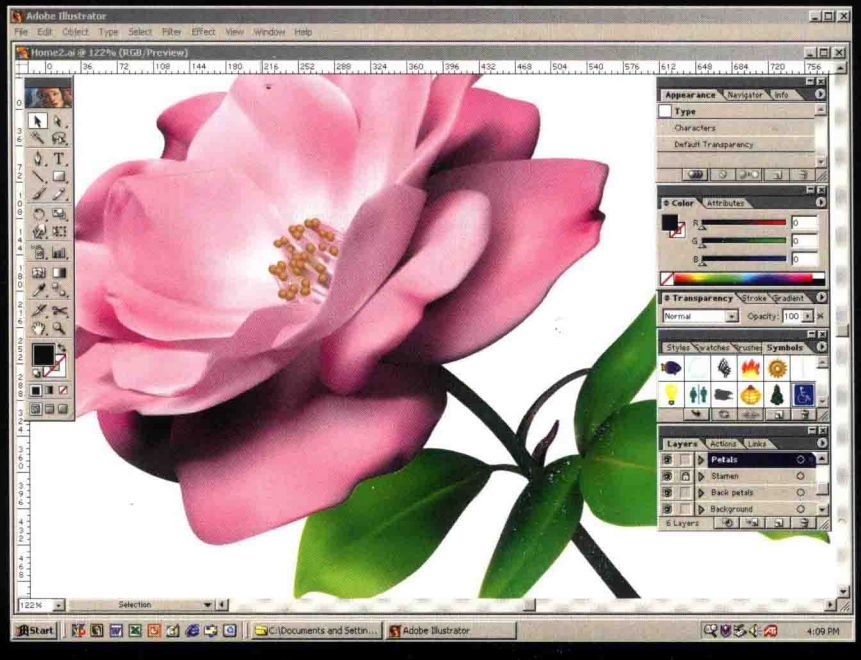
Memory and hard disk capacities are measured in bytes. One megabyte (1 MB) equals just over a million bytes, while a gigabyte (1 GB) is a thousand times as much again. For basic work, you will need at least 128 MB of RAM: around 1 GB is sensible for serious Photoshop and 3D work. Hard disks start at 40 GB, but for serious 3D and animation work, you are likely to use hundreds of gigabytes.

Always be aware that hard disks can fail. This does not happen too often, but it makes sense to keep a back-up copy of important data on a separate storage media, such as recordable CDs. Any work that is not in regular use can also be 'archived' onto such media, removing it from the hard disk and therefore making room for new files.

The operating system is a piece of 'permanent' software that is loaded from the hard disk whenever the computer is turned on, and is basically the platform on which all applications run. One of the operating system's main functions is to manage memory, so that several applications can run at once and share the available RAM. It can also make extra space available by swapping data temporarily to the hard disk, which is known as 'virtual memory' (some applications also swap data independently between RAM and their own area of the hard disk, known as a 'scratch disk').

PCs generally use the Windows operating system, developed by Microsoft, the latest version of which is Windows XP. Macs use the Mac OS X, created by Apple. You can only run applications labelled for the particular operating system you use.

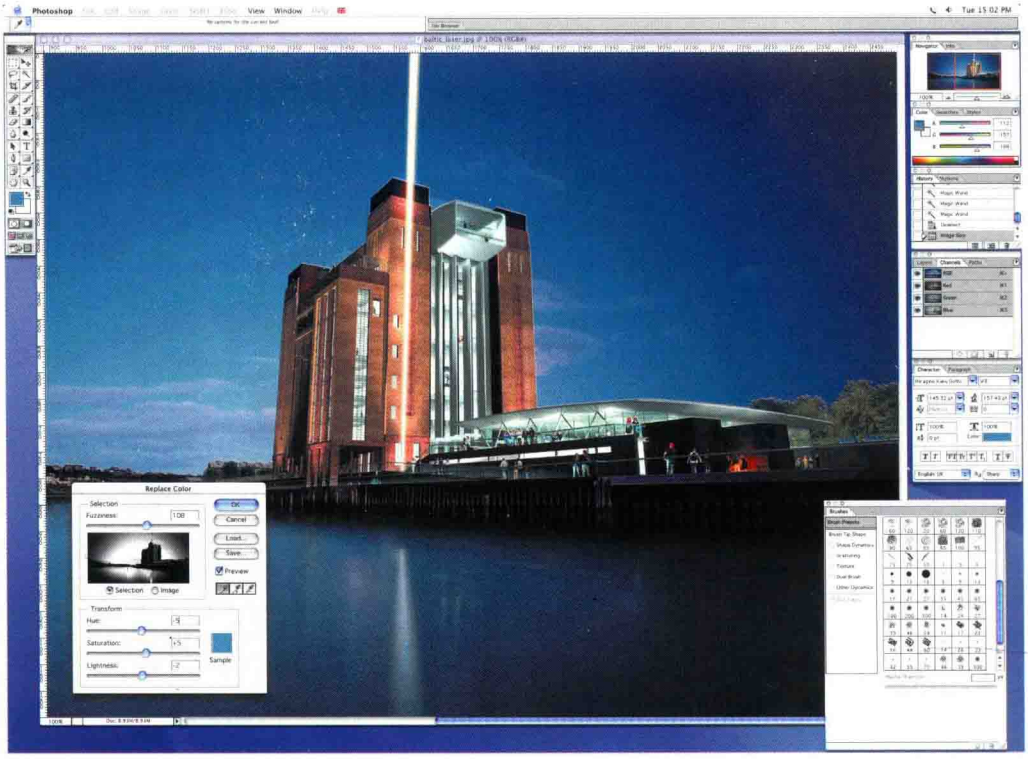


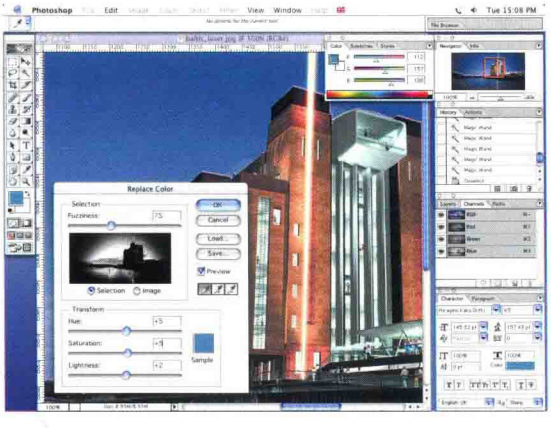


Above: There are significant differences between the Mac OS X (top) and the Windows (bottom) operating systems used on Apple Macs and PCs, respectively, but few are visible at first glance. Most professional applications are available for both platforms, but they are normally sold separately, so switching from PC to Mac or vice versa in the future would mean paying again for your software. Macs are the usual choice for the creative professions.

Although it is important to choose a suitable machine in the first place, components can be added later. Most computers are designed to be 'opened up' by the user, and minor upgrades should not invalidate the warranty. Processors and graphics cards can often be replaced, but a memory upgrade is usually more effective. RAM chips, usually known as 'DIMMs', fit easily into slots inside the computer. If no slots are free, then you will have to remove an existing DIMM to add a larger one.

MONITORS The monitor, or screen, is arguably one of the most important pieces of equipment the digital illustrator will use. Screen size, resolution and clarity can have a significant effect on the quality of not just your artwork, but also your working life. So getting the right one at the right price is important. With traditional media, your artwork is always in front of you. You can look at any part of it, tilt it, bend your head or get close up for fine detail. Using a computer is quite different.





At maximum resolution on a 21-inch monitor (top), there is plenty of room for your artwork along with any toolbars, palettes and dialog boxes in the application you are using. You may want to reduce the resolution a little, though, to increase the size of text labels and controls. In this picture, they are on the verge of illegibility. At the other end of the scale, with a 15-inch screen (bottom) it is hard to fit everything in. Palettes may have to be closed when not in use and reopened when needed, and you will not get a clear preview of the changes you have made to your artwork, since you cannot see the whole thing at the same time without shrinking it down considerably.

When your illustration is displayed on screen at actual size, the level of detail visible is actually quite coarse. For close work, you will need to 'zoom in' and show a small area at high magnification. This is one reason why, when it comes to monitors, bigger is better.

When you zoom in to, say, 200%, you are quadrupling the space you would need to keep the whole illustration in the monitor's view. Areas outside the screen can be seen by clicking scroll bars, which basically 'slide' the artwork around. The larger your display, the less time you will spend zooming in and out and scrolling around your artwork.

A second demand on screen space comes from the software. To access all the commands and controls in your painting and drawing applications, you are provided with various toolbars and palettes. These can be opened and closed as required, but it is more convenient to leave them open permanently. However, with a small monitor, they may take up more space than the artwork itself. The problem is even more acute with 3D and animation packages.

In deciding what size monitor you prefer (and can afford), the first major consideration is whether to go for CRT or LCD technology. The former is the cathode-ray tube familiar from TV sets. It generates a bright picture with high contrast, but is very bulky. The largest CRTs measure 21 or 22 inches diagonally (the system of measurement is the same as for televisions), giving a viewable area similar to a magazine spread. This is an ideal size for the illustrator, with good-quality models starting at around £500. Half this amount will buy an adequate 19-inch model.