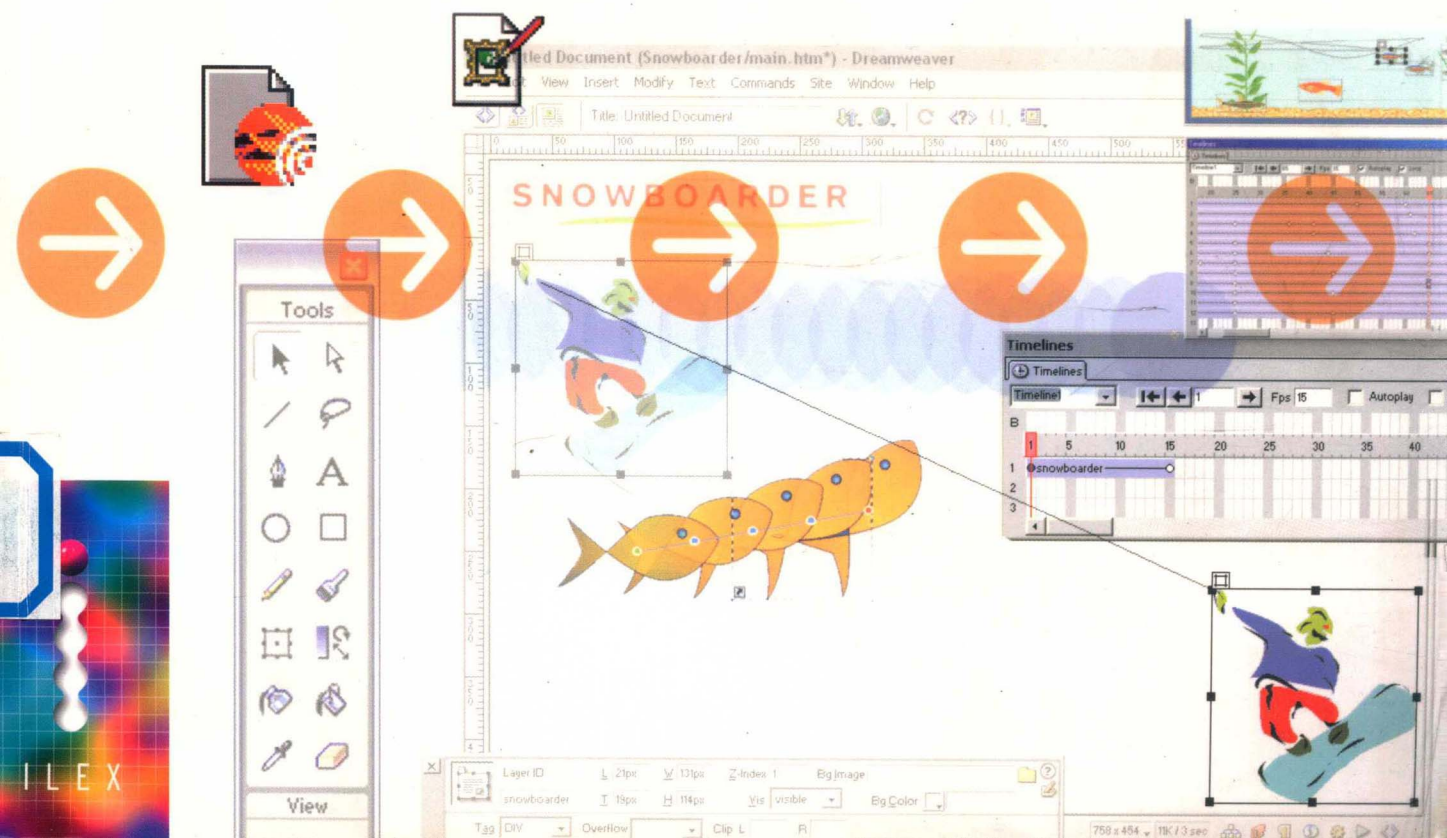


From zero to hero in easy lessons

GRAHAM DAVIS

WEB ANIMATION :

START HERE!



ILEX

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START HERE!



ALL THAT YOU NEED TO CREATE YOUR
OWN FANTASTIC WEB ANIMATIONS

GRAHAM DAVIS

I L E X

First published in the United Kingdom in 2003 by

I L E X

The Old Candlemakers

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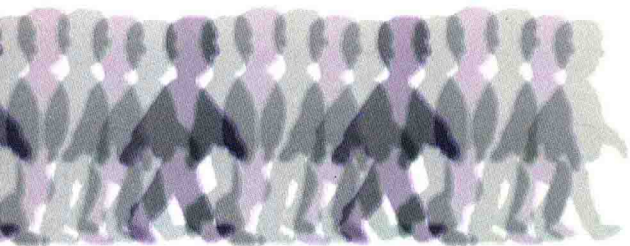
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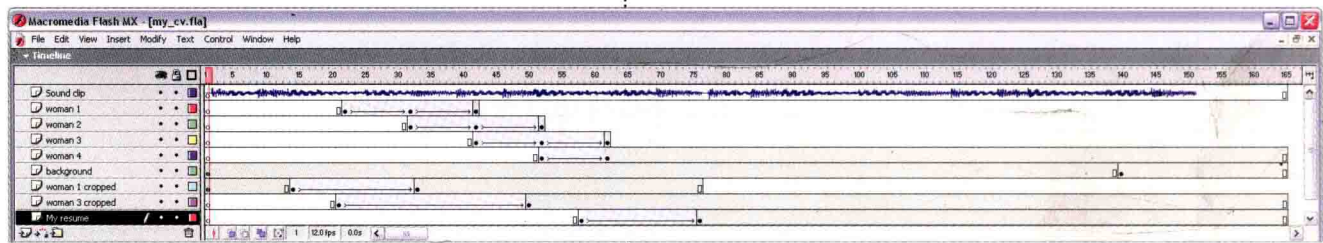
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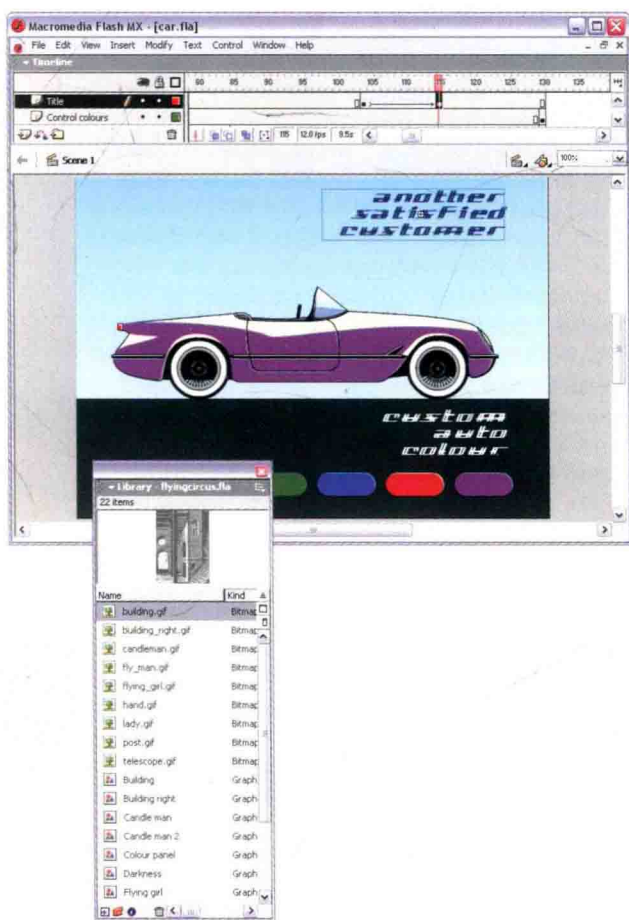


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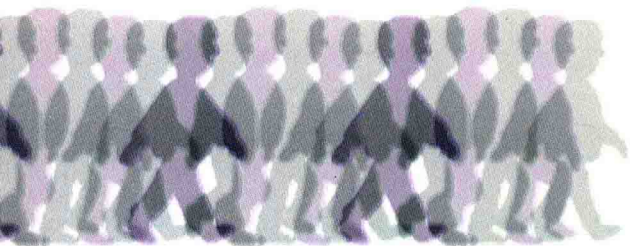


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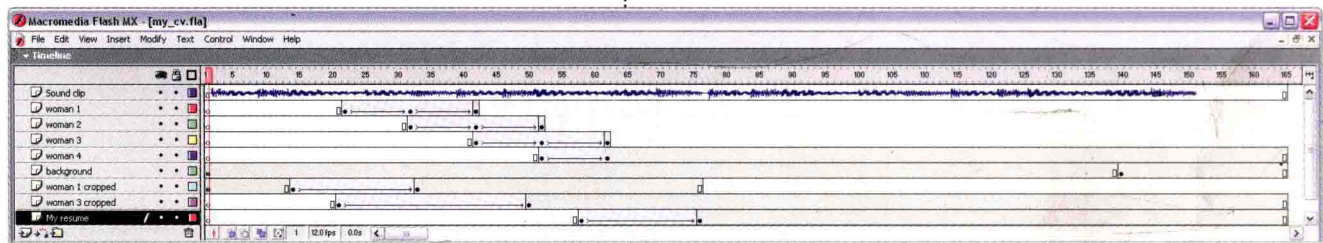
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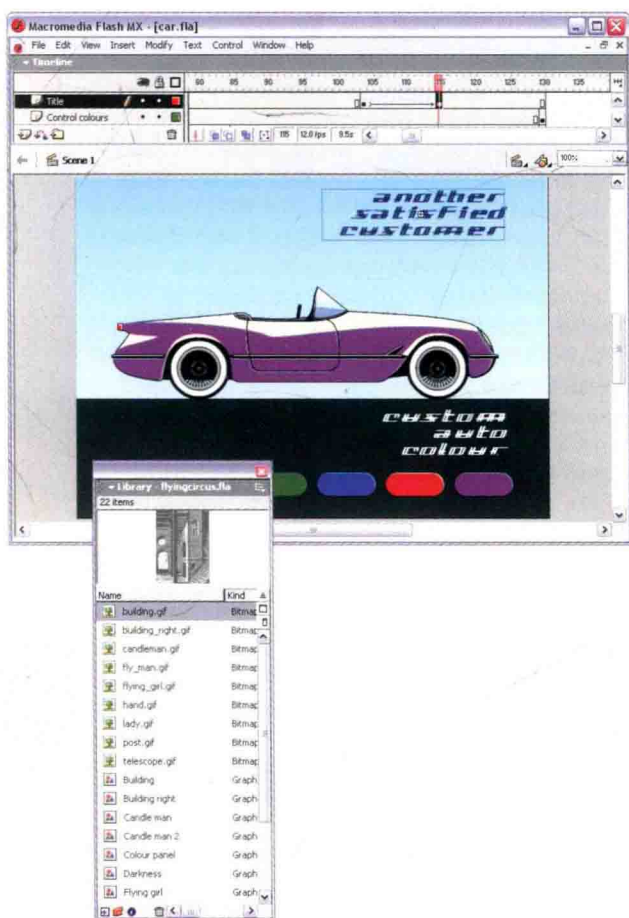


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Introduction

You may have seen animation featured on general websites, or even surfed onto some of the fantastic sites dedicated to pushing back the boundaries of animation techniques. If you thought, 'I want to do some of that', then *Web Animation: Start Here!* is the book for you. The exercises over the following chapters will enable you to create great animations within hours, rather than months. Like most creative people, you'll probably want to run before you can walk, but you will make quicker and more genuine progress if you follow the projects through in sequence. We've created them so that key concepts are introduced at the right time; and if you follow all the steps, you will quickly develop new skills and build on them until you have a good grounding in the basics you'll need to compete with the experts. So what do you need to become a Web animator? Well, the essentials are ideas, software and web space.

Ideas

Where do great ideas come from? Almost every great animator began by copying other people's work. This is no bad thing: if you do this as well, you will learn from the greats, while gradually developing your own 'voice' – that mix of original ideas and distinctive style which will get you noticed. The Web is full of inspiration, and you can find some links at www.webanimation.web-linked.com.

Also, think about a TV show like *The Simpsons*, which attracts huge, worldwide audiences. It's a global success, but uses a simple, two-dimensional (2D) technique and bright, primary colours. What it also does, though, is rely on great storylines and distinctive characters for its appeal. If nothing else, this demonstrates what you can achieve with imagination, observation and original material. Your own ambitions may be more modest; you might simply want some animated graphics for your homepage, for example. But whatever the scale of your ambition, *Web Animation: Start Here!* has some ideas for you to try out – and you will also be shown how to integrate them with your website.

Software

You will almost certainly be creating your animation on a PC or Mac. Fortunately, all the main software applications are available on both platforms, and once your animation is uploaded to the Web it can be viewed by everyone. In each project, we'll say which software we've used to create the examples, but also suggest some suitable alternatives. We all know that software can be expensive, but many suppliers allow you to download a trial version of their product, which is usually 'save disabled' or time-limited to 30 days. In addition, there is a wide range of shareware available – see www.webanimation.web-linked.com for links. Shareware is usually distributed so that the user pays a modest fee if they wish to use it beyond 30 days, but sometimes it's totally free.

Webspace

Webspace is usually affordable, and in some parts of the world, is available free from many service

providers. The Web is a fantastic showcase for the animator's craft, since it provides a potential worldwide audience (if you can tell the online community where to find your work!). Modern software has also removed many of the barriers that existed when animation was largely created with drawings, cells, rostrum cameras and film.

Despite this, you will find one limitation online: bandwidth. What's this? Well, imagine having to pour milk onto your breakfast cereal using a straw. The Web is not so different: it is a mass of small 'pipes' (the existing communications networks) through which ever-greater numbers of people are pushing more and more data. That's why, for many people with slow, dial-up connections, the Internet experience can be a frustrating one of slow download times and other problems. But higher speed connections (i.e. bigger pipes), such as ISDN, ADSL and cable modems mean that the long wait for animations to download will soon diminish. In the meantime, however, it is sensible to create animations that are of a relatively small file size. Remember: you should avoid creating animations for people with fast connections, when the vast majority of your audience won't have them yet. Our projects will show you how to do this without spoiling your work.

Of course, 2D animation is primarily the art of illusion – the illusion of movement and perspective. For example, in the project on page 104, the woman appears from the distance, enters the building through the arch and moves into the foreground. Similarly, the figure in the project on page 131 *appears* to travel past the background scene; but in fact it's the background that moves. Most of the techniques to achieve this illusion of movement are fairly easy to learn and you will be taught them as you work through the book.

That said, in the simplest form of Web animation, objects do literally move. A Web design package capable of creating DHTML (Dynamic HTML – see Glossary) is all you need to create movement. The objects that can be animated in this way are many and varied: text, graphic objects, scanned images, traced bitmaps converted to vectors, digital photos and video grabs, or original images created in vector and bitmap applications. The only constraint is that they must first be converted to one of the standard

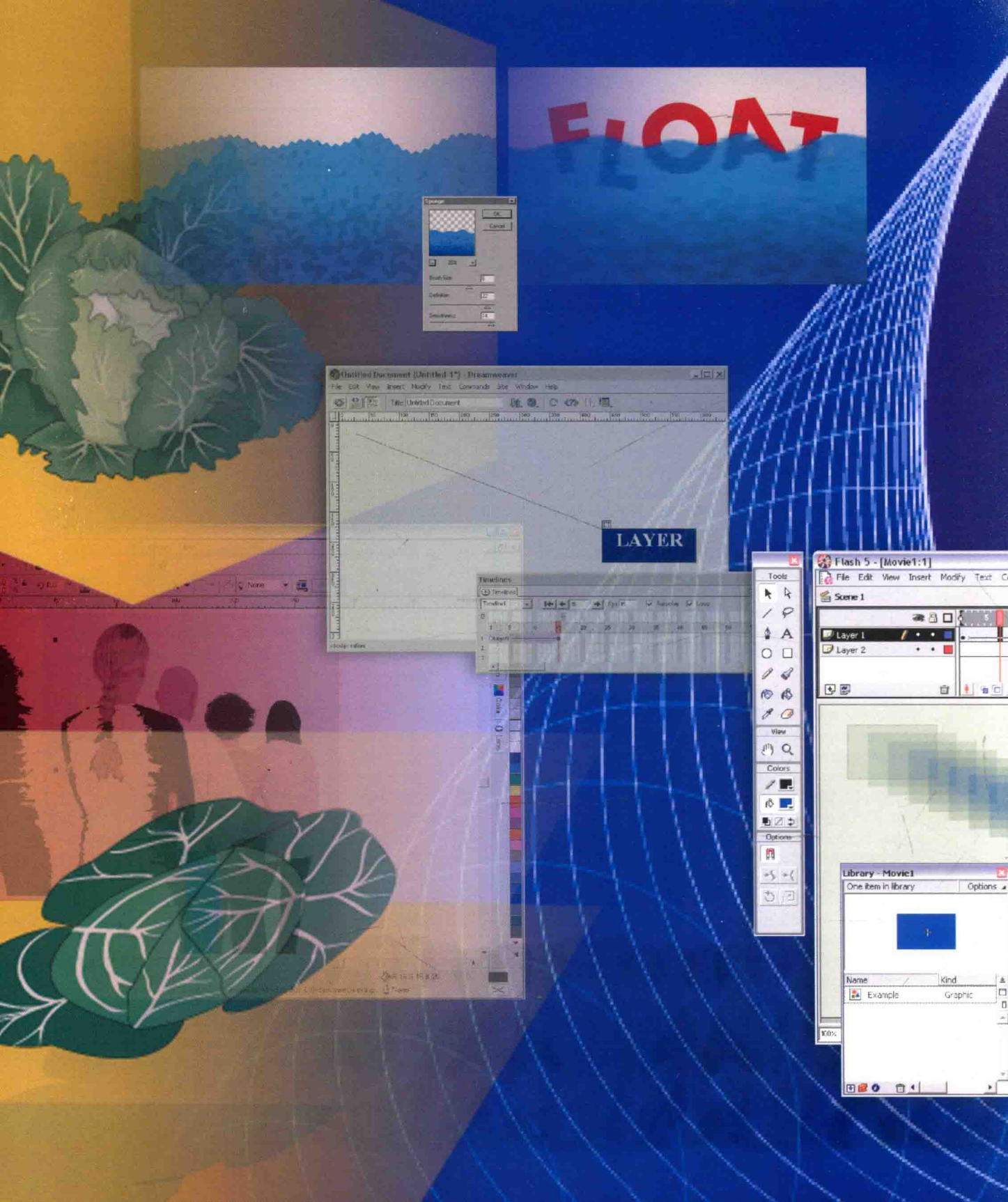
Web image file formats. And if you don't know the difference between vector and bitmap images, then be sure to read page 14 carefully.

To the novice, the Web can seem a bewildering place. To make life simpler, the things you need to know have been separated from the things you might *like* to know. So, if you want to find out more about Shockwave, QuickTime, RealVideo, Windows Media Player, SVG, VRML, 3D, plug-ins, etc, then refer to the Glossary and all will be revealed. To make your life easier still, the three primary animation technologies have been used to create all of the projects in the book: DHTML, Animated GIF and Flash.

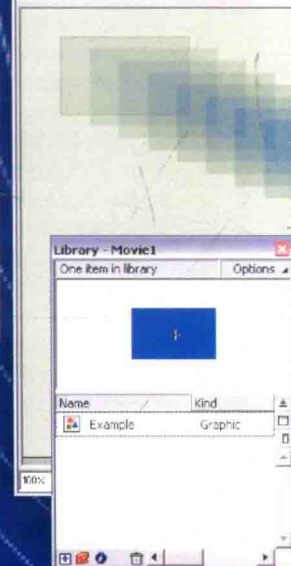
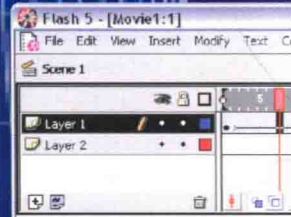
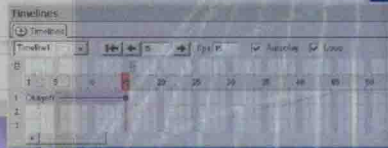
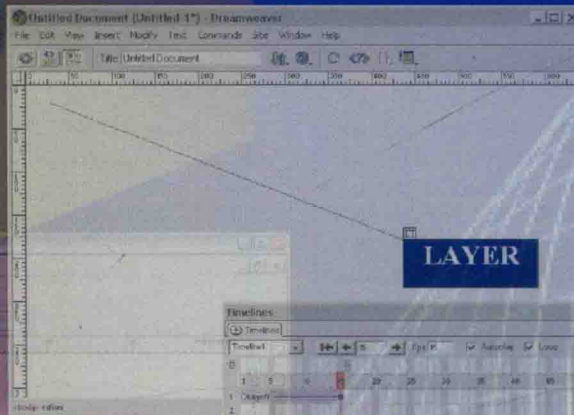
But first the basics: to view any webpage you need a browser, which normally comes preinstalled on a PC or Mac. Browsers convert the invisible code (HTML) that underlies every webpage into the text you see onscreen, and in most cases import the accompanying images. With DHTML, though, an animation starts at point A and, for example, 15 frames later (or one second) arrives at point B; it's that simple. DHTML animation can extend across an entire webpage, while GIF animation appears within a smaller, self-contained box. Each frame of a GIF animation has to be created as a separate bitmap image. GIF animation is the oldest Web animation format, but is still popular. *Web Animation: Start Here!* shows you how to get the most out of it.

But the most versatile Web animation format is Macromedia's Flash. The animations you most admire online were probably created using it. The Flash player started life as a browser plug-in, but recent browsers come supplied with it pre-installed. Flash is timeline-based vector animation (although it handles bitmaps equally well). If all your animation is vector-based (see Glossary), then it can be scaled up or down in size by simply dragging the browser window. The image quality will remain the same.

To complete the projects, you obviously need a PC or Mac as well as software (applications) to assemble or create DHTML, Animated GIF or Flash animations, and other packages for vector drawing and bitmap editing. A scanner would also be useful. And if you are inspired to move on to 3D animation, then you will need all the 'horsepower' in your hardware that you can afford!



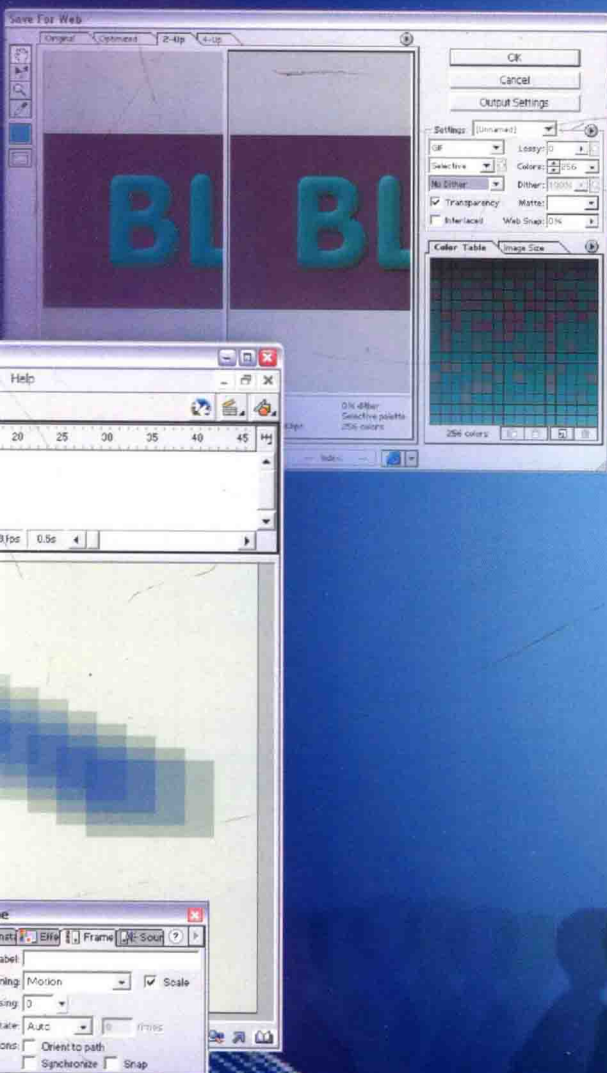
FLOAT



1 PART

The 2D Illusion

The Web opens up the whole world to prospective animators. Now anyone can create an animation and put it on show using public webspace. The abundance and variety of animation online is truly mind-blowing. Even on nonspecialist, general websites you might find animated buttons, avant-garde graphics, humble banner ads, cartoons, e-mail greeting cards, Web navigation systems, animated diagrams and much, much more. There is extensive crossover between these areas too, which makes the future of Web animation both exciting and unpredictable. But one feature is common to all: finding a way to suggest and manage movement.



10 MOVEMENT AND SPACE

The simplest form of Web animation is moving a single object across a space. For example, a balloon ascending skywards, or a cartoon Pteradon plummeting towards the ground (see the frame illustrated opposite).

Hingeing, pivoting and rotating are all simple forms too, since they comprise a mainly static image that has one or two moving parts. Take the second illustrated example on this page: in the word 'TRAP', the crossbar of the 'A' drops down like a trapdoor, then snaps shut having captured a wandering fly. Look at our website (see page 6).

The next stage is an object that travels across a space while it is itself changing. In the third example illustrated opposite, an 'f' absently struggles to catch up with 'orgot' and form a complete word.

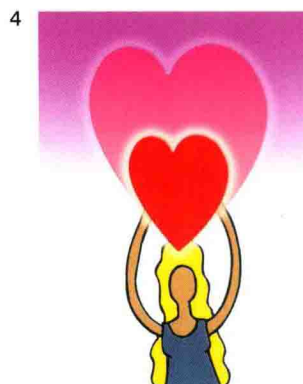
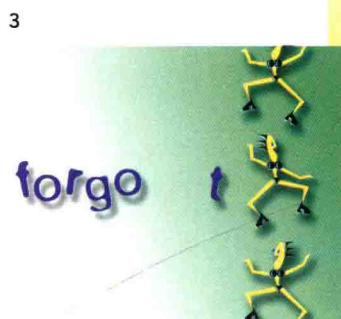
A further technique, morphing, describes the process of a stationary object changing into another object entirely, such as a square becoming a circle, the word 'Hunter' becoming the word 'Hunted', or a heart swelling (see the fourth example opposite).

All the above examples share a common attribute: they exist in a 'flatland', where there is no attempt to imply the depth and perspective found in the physical world.

Movement and depth

Animation guru Richard Taylor describes the process of animation as not so much making drawings move, as drawing movement. So, once you have mastered the techniques of animating in flatland, you will probably want to add some 'depth' to your animation.

But before we move on, let's pause for a moment to examine 2D and 3D spaces. It should be readily apparent that 3D animation exists in a virtual 3D space on a monitor screen, which has x, y and z axes. In a 2D virtual space (think of *The Simpsons* again) the illusion of depth is created by putting objects onto layers, with the objects on the top layer obscuring those beneath. We use software to manipulate these layers, but in traditional cell animation there could be four or five transparent



1 Moving words or images, the raw material of animation.

2 Gentle wit can be more effective than obvious humour.

3 The expected or unexpected can both have compelling results.

4 Nonverbal communication.

cells stacked in layers, each with specific parts of the animation painted on them. In this way, only the part of the image that changed, a moving arm for example, required a cell change. Each individual frame was then copied to film. The whole process was (and remains) very laborious.

Layers also allow you to create a more convincing impression of movement, and there are a variety of techniques you can use to achieve this. When an object or character appears to travel while remaining in the centre of the screen, it is the background image that must be moved rather than the object itself. To achieve this, of course, the background image must be wider than the animation frame. This is called a Panning

5



6



7



8



9



5 2D space animation can only suggest a 3D space.

6 A typical six-step walking sequence. In midstep, the figure rises slightly.

7 Multilayered 2D animation techniques owe their origin to traditional cell animation.

8 Each character moves forwards a small amount if the walking sequence is to be convincing.

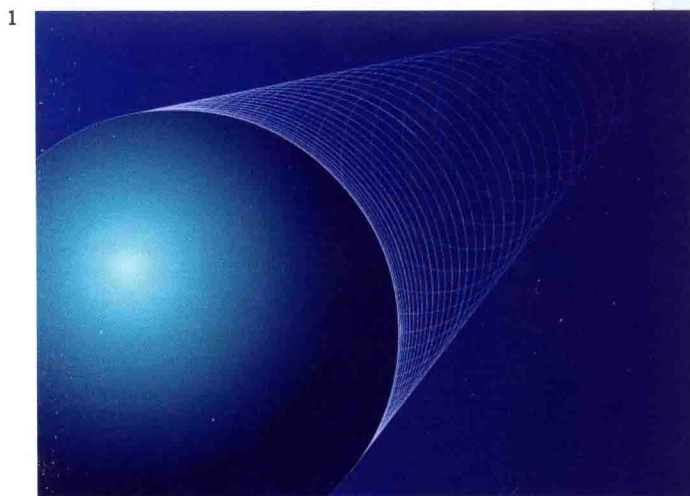
9 Causing an object to hurtle towards a distant opening is a perspective technique that is often used.

Background. A static figure would look unreal against it, so the figure needs to be partially animated using a 'walk on the spot' sequence.

An even more convincing technique to create depth and movement is to first make a static background in soft focus, and then add another layer in front of that containing a slightly out-of-focus panning background. On the layer above that you can place a figure walking on the spot and, finally, on a foreground layer in front of the figure, put some objects like lampposts or trees on a much wider panning background. The topmost panning layer moves faster than the panning layer behind the figure. This creates a very effective animation, akin to looking out of a car window and seeing the hedgerow rush past more quickly than the distant hills.

These techniques are just as effective when applied to graphic objects and text, and even to abstract shapes and colours. There will also be times when a figure walks across the screen, and for this a walking sequence is required. Picture 8 shows a typical example, which can be varied depending on the character's size and shape.

Finally we reach the outer limits of 2D animation: perspective movement. Imagine an object or figure appearing to come towards you or move away from you. A classic example would be a train rushing towards you or a spacecraft coming from behind your head and zooming away into the distance. Picture 9 shows how this can be achieved by using a vector drawing application. Another classic variation is the view through a car windshield travelling down an endless highway. The car remains static as the movement comes from a sequence of background images with road markings and telephone poles in different positions. Graphic objects and text can also be animated using variations of this technique. The best ways to achieve such effects will be discussed throughout *Web Animation: Start Here!*.



Speed

There is one more feature that will make animated movement more convincing, and that is the use of acceleration and deceleration – in other words, the control of speed. Remember the classic cartoon image of a figure skidding to a halt just before a cliff edge? In animation terms, when an object ‘accelerates’ it covers the same distance in increasingly fewer frames (or a greater number of frames when it decelerates). Many animated actions require a variation in speed – the golf ball animation on page 92, for example. Flash has a fantastic feature for easily controlling acceleration and deceleration.

Style and character

Animation, like any visual art, evokes an emotional response in the viewer, so style is important even if your content consists of simple graphics. For example, a graphic may be funky, retro, clean, hypnotic, cosy, avant-garde, frenetic, etc., and if it is figure-based, you can make your characters suggest any emotion. The examples opposite show how varied Web animation styles can be.

