Animation basics

Animation means moving - anything that moves automatically on the screen is called an animation (well, unless it is a real-life movie). Animations allow a Poser slut to walk around aimlessly or an annoying web advertisement to flash the words "WIN BIG!!". The Increadibles - that's an animation. So is most of the newer Star Wars. Many programs have animation capabilities, and there are many things they share in the way they implement this capability.

INTRODUCTION

Before the computer, there was animation. You have probably made one on the corner of that spiral notebook. Maybe a happy face that turns sad as you flip through. Maybe a little jumping stick figure.

So, the hard way to do it is to make a bunch of images, each a wee bit different, so that when they are presented really fast our feeble brains think that what we are seeing is actual movement.

We can do the same thing on the computer, but we can also use tools that make things a whole lot easier than making each frame separately.

TWEENS & KEYFRAMES

As said, you could make a separate picture for every image (called a frame) you flip through. Animations use anywhere from 10 to 30 frames per second, however, so to do each one separately would take a while. In other words, for a bouncing ball, you would move the ball a bit towards the ground, make a frame, move it a bit more, make a frame, etc.

Much easier to have the program figure out where to move the ball. First of all you tell the computer the beginning position of the ball. Then you tell the computer the ending position (for now) which is the ground. The computer can fill in the frames between easy enough.

The two frames in which you told the computer where to position the ball are called the *keyframes* (after all, they are key to the movement). The frames the computer filled in itself is called a *tween* (from in between - get it?).

So in order to get the ball to bounce once you need to specify 3 keyframes - the beginning position, the ground position and the ending position. The program will fill in the two tweens.

Movement is not the only thing you can tween - in programs that support animation you can tween many different things - shape, size, and sometimes even attributes like color.

Many times keyframes are made automatically when you position something at a point in the animation. Other times you have to manually add the keyframe for the program to recognize it.

ACCELERATION

If you are particularly perceptive to physics, you may have noticed that a ball does not maintain the same speed throughout a bounce. It starts off slow, gains in speed, and then decreases in speed after the bounce. Most things in real life are like that. A car doesn't start out at 70 miles per hour.

Programs that you will use for animation know nothing about physics - the ball will go a set speed throughout the bounce. But the program will allow you to account for physics. All animation programs will somehow allow you to control the speed of a change throughout a tween. How this is implemented changes from program to program. It is not important to control acceleration at first, but if you want to work out the details in the movement of something it can be.

TIMELINES

All programs that use animation depict the movement on an editable grid called a timeline. Sometimes this timeline is a bit hidden, but poke around and you will find it.

This timeline shows you frames in time on the horizontal access, and will have some indication of what frames are keyframes and which frames are tweens.

If you have two or more items moving independently, timelines will also show the different items in rows vertically. So the top row would represent the movement of our bouncing ball, and the next row could be something like the movement of another ball being spun around a pole. Or something like that.

OUTPUT

In all programs the animation has to be saved as something you can see in another (more readily available) program. So in Flash, you save it as a .swf file. In Director you save it as a self-running "projector".

Small gif animation programs like Macromedia Fireworks or Adobe ImageReady let you save things as "animated gifs". These are small animations (read short and small in size) that can be played in any web browser (or of course added to your web site).

In most other programs you save your animation as a movie file which can be played in Quicktime (or other movie displaying program) or further edited or chained together in a video editing program.

FRAMERATE

When you output your animation (or sometimes even before or both) you need to specify how many frames (those separate pictures - remember?) you are going to flip through per second. Ten frames per second is a good choice since it saves on memory - these little pictures can eat up memory and processor speed like crazy. But 10 fps can look a jerky, so you might want to go to a higher number. The highest number of frames per second you should use is thirty. Not many people can discern the difference past this point.

COMPRESSOR

If you are rendering an animation or otherwise making a Quicktime movie, you will be asked other things besides framerate. These options have to do with how the movie is "compressed" to save disk space. There are a myriad of choices here, and it may be best to start with the default settings and see how they do. From there you can see the quality (or lack of it) and experiment appropriately.

Remember that movies can eat up disk space like crazy. After making a movie always check on the file size (highlight file and go to File/Get info). Be prepared to make it again - but smaller.