The broad picture

Cliff Joseph takes in the virtual reality features of QuickTime.

As we go to press, Apple is preparing to launch version 4.0 of QuickTime, its video and multimedia software. QuickTime 4.0 will be an important upgrade and we'll be covering it in this column as soon we can get our hands on it. As an aperitif, though, it seemed like a good idea to look at one of the less well-known aspects of QuickTime. As well as playing video clips, it includes a feature known as QuickTime VR, or QTVR to its friends.

QuickTime VR enables you to take a series of still images and combine them into a 360° panoramic image. When you open a QTVR file you see just a small part — typically a 30° arc — of the entire image and you can use your mouse to navigate around the panoramic landscape, examining different areas as you go.

You can also link a series of panoramas together to create a complete virtual reality environment on the computer screen. An estate agent, say, could create a series of panoramas, each of which could depict the interior of a different room in a house. Each panorama could be linked, allowing the viewer to 'walk' from one room to another, and this entire virtual reality tour could then be placed on a web site so that potential buyers could view the property before making an appointment to visit it personally.

QuickTime VR is ideal for architectural walk-throughs and there are even department stores (Marks & Spencer is one) which use QTVR models for training purposes.

■ Making movies

Another important feature of QTVR is its ability to create 'object movies'. You can photograph any 3D object from a series of different views and combine those photos into a photographic-quality 3D model which can be viewed from all angles. These objects can be placed within larger panorama files, and act as 'hotspots'.

▲**Fig 1** The QuickTime VR Authoring Studio can import a series of pictures and stitch them together...

▶**Fig 2** ...to create a 360° virtual reality landscape through which you can wander and explore

Each panorama could be linked, allowing the viewer to 'walk' from one room to another

Figs 1&2 show the QTVR Authoring Studio creating a panorama using pictures taken at a motor show. If you wanted, you could insert object movies into the panorama, representing the various cars on display. This would allow viewers to click on a motor to activate the 3D object movie and view the car close up, from all angles.

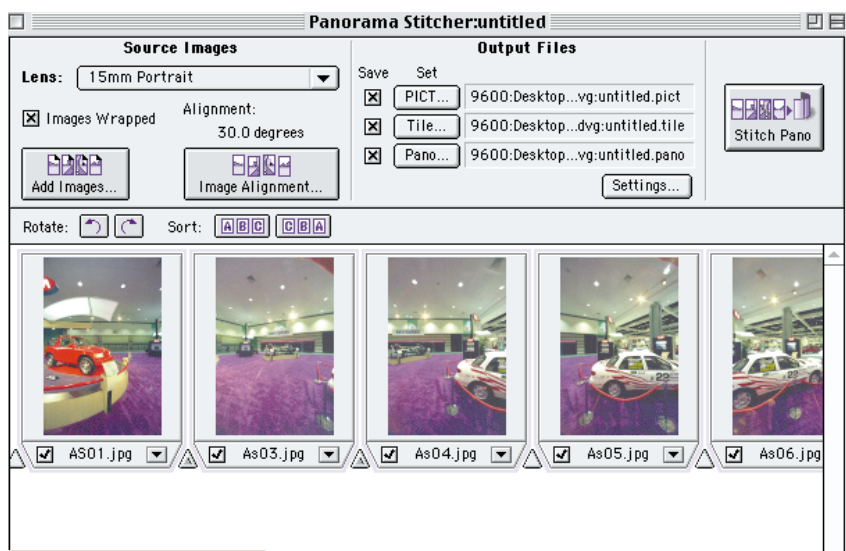**There are similar** panoramic video technologies available for Windows but they're not cross-platform. QuickTime VR is simply a component of QuickTime, which is available for both Mac and Windows, so it's the best way of creating panoramic scenes which can be viewed by most computer users. All that a Windows user needs to view a QTVR file is the Windows version of QuickTime, or the QuickTime plug-in if they want to view QTVR panoramas on the internet.

■ Photo-fit

The other reason that it's now quite topical to look at QuickTime VR is the fact that the hardware needed to create panoramic photos is now less expensive.

When QTVR was first released, the best way to create a panoramic photo

3D ALTERNATIVE

We mentioned Bryce elsewhere for a reason: as well as allowing you to export 3D landscapes as QuickTime VR files, the new version of Bryce which has just been released also supports a new 3D file format called MetaStream. This is a 3D format which has been specifically designed by Metacreations for putting 3D objects onto the internet. The format has also been licensed by Microsoft, so it could well become a new cross-platform standard for 3D on the web. Metacreations has also come up with a technology called MetaFlash that can allow digital cameras to capture 3D images, which can then be converted into the MetaStream format. There is, of course, a *Hands On 3D Graphics* column (p248) but MetaFlash and MetaStream will be particularly interesting to Mac users. As Gary Lauer, president of Metacreations commented, 'Most of the browsers on the internet may be Windows, but most of the 3D designers are on Macs.'

So, if we can agree with our 3D colleagues, we will take a closer look at MetaStream and MetaFlash in a future *Hands On Mac* column.

able to produce good results using a £300 digital camera and no tripod.

▲**Fig 3** You can use **3D programs** like **Bryce to create imaginary QTVR** landscapes

Another thing to remember is that you don't have to use photographs to create panoramic landscapes. You can use 3D modelling programs, such as Bryce, which have an option for exporting panoramic images. This allows you to create realistic imaginary landscapes [Fig 3] which you can either put on the web or use in 3D games design.

The QTVR Authoring Studio costs £300 (ex VAT) but there are less expensive options such as PhotoVista from LivePix. There are even some Windows programs, which work with the Windows version of QuickTime VR. But this is the Mac column, so that's all we're going to say about them here.

Agfa bundles PhotoVista with some of its digital cameras, so you could get the combination of digital camera and panoramic software for less than £500. There's also a trial version of PhotoVista available on the internet, so if you're interested in QTVR you can download this and get started for almost nothing.

was to use a specially-designed panoramic camera. These can cost thousands of pounds so the use of QTVR was mainly restricted to professional photographers and designers who were prepared to spend the money on specialist equipment.

The other option was to use a conventional camera to take a series of pictures which could be combined, to create a single panoramic image. You took a picture, rotated it 20° or 30°, then took another picture, repeating this process until you'd taken a dozen or so pictures which covered the entire 360° landscape around you.

This was just the start of the process, though. The next step was to scan-in each photo and somehow 'stitch' them together to create one large panoramic vista. This panoramic photo then needed to be folded over onto itself to create the illusion of a complete 360° landscape.

The whole business was expensive, time-consuming and complicated. And, the stitching process was particularly tough, requiring a lot of time and effort to produce good results.

Now, though, you can buy a low-cost digital camera for well under £500. This will allow you to take all the pictures you need and then download them straight onto your Mac in a matter of seconds. You still need to stitch the photos together but this process has been made incredibly simple by a superb — and virtually unknown — piece of Apple software called the QuickTime VR Authoring Studio.

■ **Sew that's it…**
The QTVR Authoring Studio automates the stitching process for you. It will import all your individual pictures, matching the edges of each with the edges of its neighbour. If they are not properly aligned, or if the lighting is a little different from one picture to the next, the program will automatically adjust the pictures to produce the best possible match.

There's a limit to what the program can do, of course. If you're not using a tripod, and your hands are really shaky, it may be unable to match two badly misaligned adjacent pictures. The software is extremely tolerant, though, and I've been

I've been able to produce good results using a £300 digital camera and no tripod

PCW CONTACTS