

I JUST RETURNED FROM A TWO-MONTH TOUR of Europe and the Caribbean during which I was using various QTVR panorama tripod heads that are made by Kaidan. In all cases, a Sony DCR VX1000 digital video camera was used to acquire the QTVR images. Instead of using 35mm film for the project, I decided to use a digital video camera, since the project required over fifty panoramic locations.

DIGITAL CAPTURE STREAMLINES THE JOB

The assignment was to acquire panoramic vistas and digital video of exotic travel destinations that would be incorporated into a high speed ADSL Internet site called digitalplaces.com. Sony's VX1000 DV camera comes in handy for shooting digital stills and full motion video. It saves me money, I can see a video playback of the captured images to make sure everything is working, and the images are comparable with film for use on the web, which was my targeted medium for distribution.

This camera also does a remarkable job of shooting locations such as the Caribbean's many underwater coral reefs. The DV format of the VX1000 cuts quite nicely with DVCAM, the new TV broadcast format that is slowly replacing Betacam. DVCAM is the format that I have now adopted for television production.

For the QTVR panoramas, all the images were captured outdoors in wide open places. I was not concerned with using the wide-angle

lens attachment that is usually required when shooting interiors. All the images were captured by setting the camera to manual mode with the focus set to infinity and the exposure set to a constant that was balanced for under- and overexposed lighting conditions.

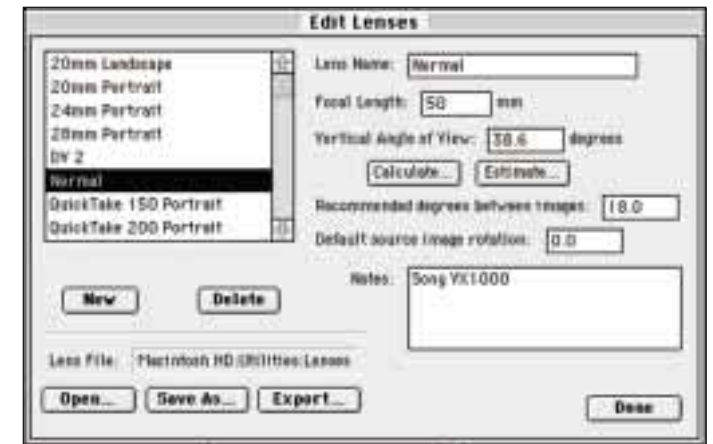
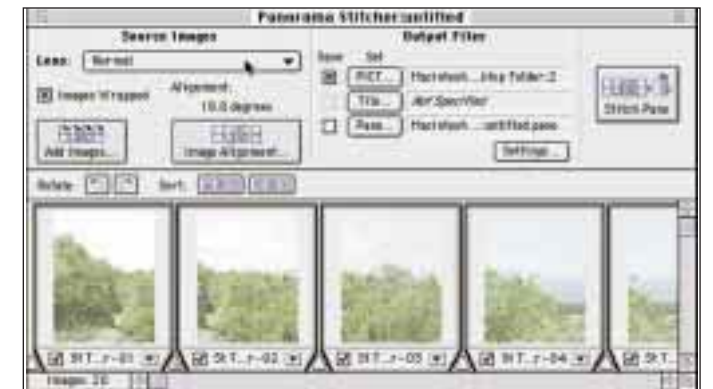
Surprisingly, the best results came on days that were overcast because the whole panoramic image was evenly exposed without harsh shadows. However the white sky proved to be a problem. I had set my exposure for the buildings or the landscape and overexposed the white clouds, feeling I could enhance the sky later in image manipulation software.

PANORAMIC PITFALLS

A very tough shooting situation is a panoramic location which has lots of moving people or cars. You need to anticipate a break in the traffic before you move the camera to take the next still picture. I just let the camera run and rotated the tripod QTVR head when the coast was clear. People and cars seem to pass by your camera on the right side (except England) so it is best to rotate your camera to the left if you don't want them to show up several times in the panorama.

Movement of people or objects only becomes a problem if they happen to appear on overlapping parts of the images. On one frame your subject may be still. But then you move the camera and take the next shot — and they decide to move at that instant. And they are located in an overlapping part of the image, meaning they will be blurred in the final composite PICT.

The only easy way to correct this problem is to wait until the subject has moved out of the frame. Otherwise you can remove the blurred image altogether with the cloning tool in *PhotoShop*.



Top: The Settings box allows you to create your own lens settings. Bottom: Main interface for QTVR Panorama Stitcher

To capture the series of still frames to the computer, I imported the images via Firewire using a Radius *PhotoShop* plug-in called PhotoDV. This plug-in controls the playback of the video camera and captures the frame when you click the mouse. It also de-interlaces and re-sizes the image from the standard DV aspect ratio of 720x480 to a 640x480 4/3 TV aspect ratio. Unless you resize the frame grabs, your final panorama will look stretched, with everyone appearing unusually skinny. (In some situations my wife liked the look!)

Make sure to number your images in numerical order such as castle-01, castle-02, etc. — not castle-1 — for easy drag and drop import into Apple's QTVR Authoring Studio.

QuickTime VR: Taking it for a spin

In the last issue, we explored several methods that are used to photograph QuickTime VR images. Now let's take a look at the next step that entails importing photographs into Apple's new QTVR Authoring Studio and stitching them together to create a panoramic image.

BY BOB CONNOLLY

SETTING UP QTVR

Now comes the hard part.

Apple's QTVR software is truly amazing once you have entered the correct settings. There are so many different lenses on the market (especially fixed lenses on digital cameras) you need to tell the software what focal length of lens you are using, the number of pictures per panorama, the degrees of rotation and the vertical angle of view.

The standard video lens found on most video cameras equals a 50 mm film camera lens and it is important to load this setting into the settings file in Apple's QTVR authoring studio. On one panorama I had inadvertently zoomed the camera lens slightly, which changed the focal length, causing the software to fail.

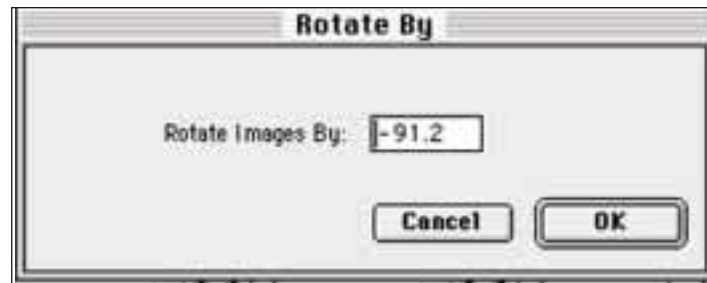
It is important to make sure that the video camera's lens is set to as wide as possible if you want to use a 50 mm setting in Apple's QTVR Authoring Studio.

I experimented with two Kaidan QTVR Tripod heads, the least expensive KiWi-1 and the hefty QPX-2. While there is a big difference in cost, I found that the KiWi-1 worked just fine with the heavy weight of the Sony VX1000 video camera.

An inexpensive stick-on leveler from Home Depot worked for leveling the camera, but I found the KiWi's smaller tripod head less efficient in keeping the camera from tilting slightly, resulting in a slanted horizon line. You need to mount the camera on its side to get a wider field of

I took twenty images. Each successive image was 18 degrees apart. This gave a 50% overlap in image area and an ideal situation for authoring. Clicking one button called "Stitch Pan" joined all the pictures together into one big long PICT file and compressed the image into a QTVR movie. This is very impressive software indeed.

To accomplish the task, the software looked for common elements in each sequential image and warped the pictures until all the edges in each picture were aligned. In some lo-



Use the rotate image box to correct tilted images.

cations where I had tilted the camera upward in situations that had high buildings, the authoring studio did a great job of stretching the rooftops to keep the seams that joined the pictures together virtually undetectable!

Although Apple's authoring studio does a good job of creating the panorama, you will soon become a master with *PhotoShop* as you attempt to clean up the problems inherent when shooting QTVR.

Shooting in overcast conditions can provide even lighting, but your skies are totally blown out and devoid of any blue. The simple way to correct this problem is to select the white sky with the magic wand tool and fill that area with rendered effect clouds that can be found in the *PhotoShop* Effects menu.

To get away from the uniform look that is generated from the rendered cloud effect, you might try the following method, which I found also gives video frame grabs a film look:

1. Select the white sky with the magic wand tool and save the selected area.
2. Copy the entire image and paste it into itself using the multiply function. Adjust the percentage of the multiply so that the colors are not too oversaturated and the contrast is not too dark. This should give the image a film feel with rich colors and less gray mush as is found in video captures.
3. Load the sky selection and fill it with *PhotoShop*'s rendered cloud effect. Adjust the fill transparency to allow

for some of the overcast sky to show through. This will create a natural look with some blue areas appearing between the overexposed clouds.

It is also important to remember to set your camera to manual for one common exposure or you will have banding where the picture is stitched together. In situations where one side of the street is totally in the shade and the other is in bright sun, shoot your panorama slightly overexposed in white sunny areas such as white painted buildings. If you have to adjust for exposure for the shaded side of the street, do it only twice: once, when you enter the shaded area with your pan, and again when you enter the sunny side.

You will have to correct the banding area where the two pictures join by using *PhotoShop*'s retouching tools. You will soon master the dodge and burn tool by brightening dark sides of the street and darkening overexposed buildings on the other.

COMPRESSION AND PRESENTATION

To get this final masterpiece on a CD-ROM or a web site will take some experimentation if you are particular about the final image quality.

If you're concerned with a smooth panning motion, you will need to compress the panorama movie by using the QuickTime Cinipac codecs because of the quick decompression response time.

If you're concerned with higher quality, then use JPEG compression. JPEG decompresses much slower and causes a jerky motion when panning but it has the best picture quality. QuickTime 3.0 has a Sorensen codec and it is great for delivering small file sizes over the web. The movie is jerky until you pan through the movie once and then it plays back from RAM fairly smoothly.

QTVR Authoring Studio will do much more than stitch panoramas together. You might also want to shoot several panoramas in the same general location and link them together using "nodes". Nodes are interactive hot spots that are embedded into a QTVR panorama. When you move your mouse over a node, the cursor changes into a pointer, which signifies that you can move or jump to a new panoramic location. Node locations are usually placed around a door or pathway.

You can also embed QTVR Object movies into the panorama and that subject will be covered in a future issue.

Importing your QTVR into a Macromedia *Director* presentation or web page is very straightforward and no special programming is needed. The navigational code is now handled internally by QuickTime and all you have to worry about is if your panorama conveys the atmosphere of virtually being there.

To sum up the experience, once you get the QTVR Authoring Studio's Preference settings for your rig into the pro-

gram, it really is a snap to produce panoramas.

You will soon learn by experience to be patient when photographing objects that move in your scene. Wait until they move out of frame if they move at all. If you're in a hurry and are concerned by the uneven lighting caused by moving clouds, well, you have *PhotoShop* to take care of that. The biggest pain is retouching blurry cars and people that have moved. Shoot in the early morning magic hour (5 to 6 a.m.) when the lighting is even and shadows and people are scarce. *

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view and thus you need to rotate the image -90 degrees to bring it back into proper perspective.

With a little experimentation, I found that rotating the images using the QTVR Authoring Studio software by -91.2 degrees instead of the standard -90 solved the crooked horizons. I ended up purchasing the KiWi-1 because for my purposes, it did just as good a job and was a lot lighter to carry around — and of course it was one-fifth the price of the QPX-2.

STITCH IN TIME

If you shoot everything correctly, joining all the images together (called stitching) is a snap.

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