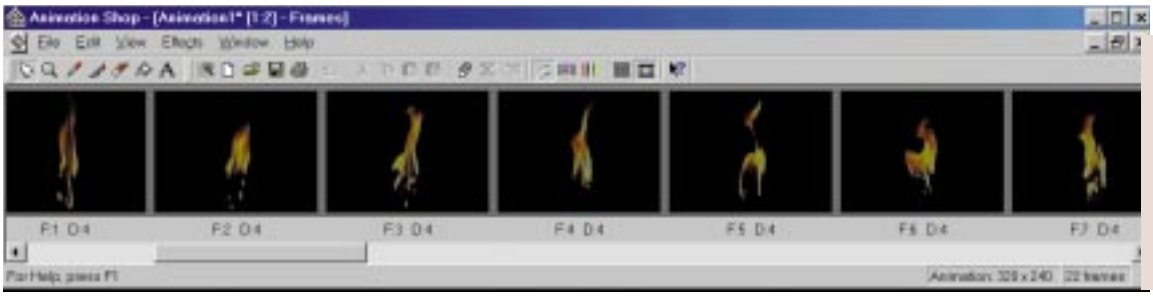
# Video, taped

**Benjamin Woolley turns his sights towards video for the 3D artist.**



◄FIG 1 A FLAME-ANIMATED MATERIAL BEING WORKED ON USING JASC'S ANIMATION SHOP

The 3D graphics artist, perhaps more than any type of computer user, has to be a Jack of all trades *and* a master of one. Uniquely, we have to be able to handle nearly all media types, not just the one in which we happen to work. We have to be able to deal with 2D graphics as well as 3D, audio as well as video, animations as well as stills, video as well as the web, and so on.

During the next two months, I want to focus on video — one of the media types that is, perhaps, the hardest to handle. Most 3D programs can use video clips as materials or textures in a scene and nearly all 3D programs include facilities for producing animations. Unless they are destined to be distributed across the web, more often than not these animations need to be transferred to video tape.

**Until recently**, using video of any sort was all but impossible for the non-professional artist. The sheer quantities of data involved (up to 25Mb for each second of video material at full resolution) were too great for standard PCs to manage and the equipment needed to transfer between analogue tape and digital hard disk was expensive.

***Most 3D programs can use video clips as materials or textures in a scene***

All this has now changed. Pentium II/AMD K6-2-based systems, furnished with a good few gigabytes of hard disk space and a hardware-accelerated graphics board, are quite capable of handling at least medium-resolution video files and you can now buy add-in cards to convert between digital video and an analogue video source (a TV tuner, camcorder or VCR) for less than £200. I, for example, have been experimenting with Iomega's Buz card which has a street price of around £125. This uses a SCSI card, which can be used to connect other SCSI devices, such as an Iomega Jazz drive to store captured video files, and a break-out box to provide video input and output. It comes with a cut-down version of MGI's VideoWave video editing package.

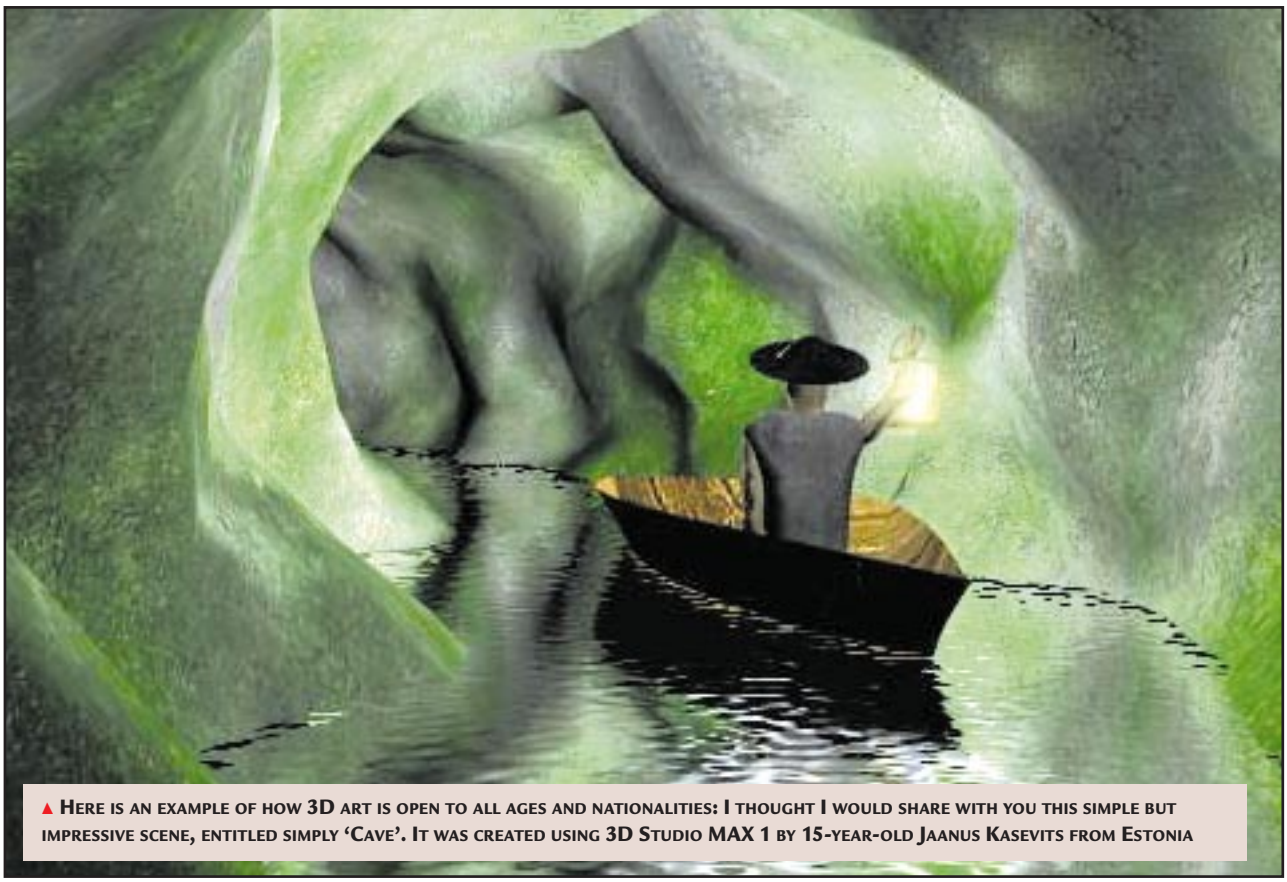
**It has to be said** that this sort of hardware setup will not produce anything like professional-grade film or video. For that, you will need specialist equipment costing thousands of pounds. Nevertheless, for a fraction of the price you can now get decent results. The Buz, for instance, is fine for dealing with VHS-quality productions. On my 300MHz Pentium II/64Mb system it could digitise a full PAL video signal in real time, only occasionally dropping frames during the capture process. This is possible because it includes Motion JPEG hardware compression (Motion JPEG, or M-JPEG, is not to be confused with the more familiar MPEG, which is no use if you intend to edit the material, as it was developed specifically for continuous video).

However, it cannot be denied that as soon as you start using video as part of your 3D work, you will find your computer coming under enormous strain. I created a one minute video sequence as a test, capturing video from a VHS source at medium-quality and 360 x 240 resolution (roughly half PAL resolution). The resulting AVI file was 90Mb and the Mediaplayer had a struggle replaying it without dropping frames, and would occasionally freeze half way through.

**So why put** your computer to all this trouble? What possible use is captured video in a 3D production? Most 3D packages allow you to use video (in the form of AVI, MPEG or Quicktime files) as a material in the scene. For example, you could map a video sequence captured from a news bulletin onto an object representing a TV screen. When you animate the scene, the TV screen will apparently be showing the video (though for this to work your animation will need to be rendered at a frame rate that matches the video, as, with each frame of the animation, the material on the TV screen is changed to the next frame in the video sequence).

A less obvious but perhaps more useful application of captured video as a material is to provide a simple method of creating dynamic objects such as fires and fountains. Of course, many 3D packages now include powerful tools (called 'particle systems' or similar) for creating such objects. However, these always add enormously to rendering times as they use up a lot of processor power. They are also complex to manage, and usually produce unexpected results.

An alternative is to use an animated material, but there are limitations. An animated material may look odd if it is looked at from more than one fixed point of view and it will have a fixed resolution, which means that it may have to be kept



▲ HERE IS AN EXAMPLE OF HOW 3D ART IS OPEN TO ALL AGES AND NATIONALITIES: I THOUGHT I WOULD SHARE WITH YOU THIS SIMPLE BUT IMPRESSIVE SCENE, ENTITLED SIMPLY 'CAVE'. IT WAS CREATED USING 3D STUDIO MAX 1 BY 15-YEAR-OLD JAANUS KASEVITS FROM ESTONIA

at a distance from the virtual camera when you come to render the scene. Nevertheless, in some circumstances it can work very well, such as an animation featuring a candle.

**Taking the candle** as an example, here is a method for generating a suitable animated material using video:

☛ Use a camcorder to record a flickering candle flame, ensuring that the background is black.

☛ Capture the resulting video as a short sequence at the lowest possible resolution.

☛ Set two flat planes at right-angles to each other at the top of the candle, in the position where the flame is to burn.

☛ Apply the resulting AVI, MPEG or QuickTime file as a texture to both planes, ensuring that the black background is rendered as transparent (this can usually be done by fiddling with the alpha settings in the materials menu).

☛ Animate the scene, ensuring that the camera does not get too close to the flames and that you do not have two flames using the same material in view at any one time — they will flicker in a suspiciously similar manner.

In order to make this and other animated materials work, you will probably need to invest in some extra software, in particular a video editing package such as MGI VideoWave — which I used with the Buz card — and the more upmarket and very powerful Adobe Premiere. Such software can be used to edit captured video, and add some basic transitions and effects.

You could also think about investing in a video effects package. Some, such as Adobe's AfterEffects, are expensive — around £450 — but there are cheaper, much more basic options. I would recommend you to try out Animation Shop [Fig 1], which forms part of Jasc's very reasonable Paintshop Pro 5 package — less than £60, online. Packages such as these are particularly useful for sorting out colours and creating masks.

• *Next month, I will deal with video output.*

## Questions & answers

**Q** I am 50/50 on this, but didn't the film Titanic use LightWave running on Linux? The hardware was Alpha based and I am sure that LightWave was used.

RAMESH SUREN

**A** *Ramesh was writing in response to my April column about Linux, where I wrote that Newtek's LightWave did not run under that operating system. He seems to be right; according to a report in the US industry magazine Computer Graphics World, LightWave running under Linux on Alpha-based DEC workstations was used to build the ship. However, Newtek (just about the least communicative company of any I have had to deal with) makes no mention of this version on its website: it lists only versions for Sun's Solaris and SGI's IRIX.*

## PCW CONTACTS

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