

## Analogue Video to DVD – Part I

### **T.O.M.S.**

*[Note: Parts 1 to 4 of this series of articles were originally published in Archive magazine in late-2005 and cross-references to other Archive entries are shown by issue and page number, e.g. 19.1 p51. In the intervening months, some aspects have become slightly dated and the more important changes will be highlighted, but do be aware that prices and availability may have changed. Caveat emptor and all that.]*

The topic of capturing video, editing the footage and burning the results onto DVD is very prevalent with enthusiasts, small businesses and professionals in the ‘opposition’ world, with full support from hardware manufacturers and software authors, and with regular articles and product reviews in PC mags.

Inevitably, it has its own language but most of the terms will be found in the AV Glossary on the Archive CD. If you wish to bone up on the basics of editing, the first three pages of Malcolm Banthorpe’s review of *VideoDesk* (11.12 pp31-33) are a good starting point.

Sadly, current ARM-powered machines cannot take on the task and, being realistic, it could be a long wait before they catch up on things like Firewire support and the application software.

This isn’t to say that video editing isn’t possible under RISC OS. For some years, from 1997, we enjoyed reasonable success with a StrongARM-ed and then Kinetic-ised RiscPC, using Irlam’s VideoDesk podule and non-linear editing software, recording the results onto video tape.

Although never really developed, the software was very user-friendly (naturally), a big bonus being the ability to use two video timelines, so insert editing – adding cutaways or ‘noddies’ – was a breeze (11.12 p36).

That said, the outlay was enormous: the VideoDesk package was around a grand and, at the time, needed a dedicated AV hard disc drive with SCSI 2/3 card to handle the job; say £1,700 in all? Plus the top-end RiscPC. Plus of course a decent hi-band video camera to do justice to it. To be kind, it would be fair to say that this capability is now obsolescent-going-on-obsolete.

In the meantime, even your average PC performance has come on in leaps and bounds. *[But at the same time, prices have plummeted and even machines costing at little as £300 can do the job, although the more powerful processors will do it far quicker.]* Improvements in standard IDE hard disc drives mean they will reliably support video streaming in real time and increased disc capacities will handle much longer ‘movies’.

It’s now quite normal for PCs to have built-in USB and Firewire interfaces, DVD burners are either pre-installed or can be added at reasonable cost and, with Windows XP, an extremely capable, non-linear video editing application is included.

So in theory, once you have a reasonably powerful PC and a suitable DVD burner available, the only extra cost is for a pack of recordable DVDs. Plus for the same outlay as before, you now get a far more capable camera, the digital video (DV) format being almost the norm.

However, that leaves a goodly proportion of enthusiasts who are still using a non-DV (i.e. analogue video) camera. Plus of course the chances are that, like us, many will have previously archived their masterpieces - edited or otherwise - onto video tape, and now wish to transfer them to DVD.

This first part aims to cover how this can be done, hopefully at little, or even no extra cost.

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### **So why Archive?**

But if we're saying that current ARM-powered machines can't handle the task and, in any event, there's no application software even forecast for RISC OS, why is this article published in Archive and not in, say, LwT? A fair point, and the reasons are purely because of links contained within recent issues of Archive.

### **'Bundled' PCs**

The first reason is of course that the many hundreds of contented VirtualRPC users already have some form of 'built-in' PC and the chances are the majority of these – whether laptop, desktop or something in-between – will have the processing power and possibly also the hardware to be able to handle the video-to-DVD task.

### **Gerald's column**

Secondly, Gerald Fitton has already got us thinking about recording *digital* video, using "some 'Movie Maker' software", which he first mentioned in his column in 18.7 p22.

As he confirmed in a later issue, he was talking about Microsoft's **Movie Maker** application software which is bundled within Windows XP, so the majority of VirtualRPC users are likely to have it already (it's upgraded to v5.1 when you instal Service Pack 2).

Apart from pre-selecting a recording quality more suitable for eventual burning to DVD, everything Gerald has recounted applies equally to our problem of recording from an *analogue* video source. So once we've got that sorted, in principle all we then need to do is to consider requirements for the DVD burning process.

### **User-friendliness?**

Thirdly, we can't resist using this article as a partial response to the PC-knockers who routinely criticise PCs for – among many other things – having an unfriendly operating system and bloated application software.

While we'd tend to agree with their sentiments about Windows up to, say, 5-10 years ago, we do feel that Windows XP really is a huge improvement in many ways. 'Plug and Play' and a considerable extension in drag-and-drop capabilities (without fanfare) are just two relevant examples which we'll put to use later in this article.

As far as the application software is concerned, we certainly agree that some long-standing titles such as Corel Draw or those within the MS Home Office suite have become increasingly unwieldy. It's very off-putting doing even a simple task with all the bells tolling and whistles blowing - *and* that darned paper clip doing its business... Thank goodness for the likes of Artworks, Draw, Impression, Ovation Pro, Schema 2 *et al.*

### **Your friendly Movie Maker**

On the other hand, it's self-evident from what Gerald has already set out in 18.7 p22 that MS Movie Maker is a good example of just how user-friendly a PC application can be, with little prior knowledge and experience demanded of the operator; in this case Gerald's grandson Sam [*aged 9 at the time!*]

But it won't hurt for us to emphasise just how *little* effort Sam had to make to get his movie into the computer, and just how *much* Windows and Movie Maker, between them, semi-automated the entire, complex process, with the absolute minimum of user input.

To summarise that, once Sam connects the DV camera to the computer (using a standard Firewire cable), switches on the camera and selects *Play*, fires up *Movie Maker* and makes a few choices from the self-explanatory options offered in the *Movie Maker* 'wizard', the rest is all done for him, as follows:

– 'Plug and Play' is invoked, the camera is registered as 'New hardware', is recognised as a Panasonic DV device (*Sony in our case*) and

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an icon appears in Movie Maker's Available devices: window;



- Movie Maker takes control over the camera;
- rewinds the tape to the beginning;
- plays the tape whilst ‘capturing’ the movie. Assuming DV-AVI (PAL) has been pre-selected in Movie Maker’s wizard (illustrated in 18.7 p23), the footage is recorded at the standard PAL parameters of 720×576 pixels and 25 frames per second (fps), ready for eventual burning to DVD;
- detects the end of the tape recording, stops video capture and stops the tape;
- if the Create clips when wizard finishes option has been pre-selected in the wizard, Movie Maker intelligently splits up the footage into separate clips (this happens where there’s significant change to the video content, usually where the recording has been paused and re-started);
- generates a thumbnail of the first video frame in each clip;
- displays the thumbnails in the clip *Collection* viewer, all ready to drag-and-drop onto the video timeline and start the *Edit* process.

To us, this is a prime example of just how user-friendly a ‘foreign’ computer operating system and application software can be.

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### Capturing analogue video

From the foregoing, we now know how to get DV camcorder footage into the computer, but how do we capture video from an *analogue* source?

First of all, what do we mean by an “analogue source”? This could be any of the following; there may well be others:

- **‘Low-band’ video camcorder** (VHS, VHS-C or 8mm).
- **‘Hi-band’ video camcorder** (S-VHS, S-VHS-C or Super 8).
- **VCR** (VHS or S-VHS). In this context, we’re referring primarily to modest-length, home movie footage which has subsequently been transferred to video tape, with or without intermediate editing. Whilst it would in principle be possible to transfer longer footage (e.g. recorded TV programmes) to DVD, using Movie Maker, it would be an extremely long-winded process.
- **DVD player**. Using Movie Maker, it doesn’t seem to be possible to capture *digital* tracks from a DVD directly as, in our experience, it won’t register any player as a capture device. Nor will it accept movies, as data files, dragged off the disc. However, it’s perfectly feasible to connect an *analogue* output from a DVD player to the computer, using any of the methods to be discussed. There’s an unavoidable small loss in video quality due to using an analogue link (e.g. SCART) instead of retaining the digital format but, in practice, this is a very small penalty. Programme length is again an issue.
- **Live TV!** This is very successful for relatively short periods but, for the same reason as explained under VCR, recording and burning long programmes is not really a practical proposition, using Movie Maker.

### Capture hardware

To be able to interconnect an analogue video source to the computer such that it can be

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registered by Movie Maker, we need some suitable digitising hardware, incorporating an analogue-to-digital converter (ADC). In overall terms, this can come in any one of three forms:

– **Internal card.** If you have a desktop PC with a spare PCI slot, you can install an ADC video card. The analogue source can be connected to standard sockets fitted on the card's rear panel; invariably a composite video and/or S-video socket for the video and usually a 3.5mm jack socket for stereo audio.

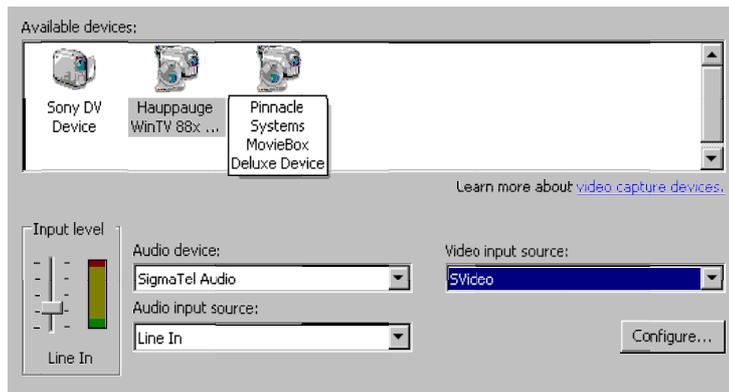
– **External ADC box.** This is suitable for laptop or 'shoebox' PCs for example, or may be preferable where you wish to swap it between machines. The small box will often have the same range of sockets mentioned above for inputting video and stereo audio, and will connect to the computer usually by a USB link, which also provides power for the box. Larger, 2-way boxes are available which can convert video in either direction (ADC and DAC) and may also sport Firewire sockets for digital IN/OUT signals. They're usually powered via a mains adaptor.

– **Cheat!!** If you already happen to have a TV card installed in your computer, you may well find that it will be auto-detected by Movie Maker and registered as a video capture device. In our own case, we have an internal Hauppauge analogue TV card and Movie Maker is quite happy to record the five TV channels, at remarkably high quality.

Typically, a TV card will also have supplementary sockets on its rear panel for auxiliary video and stereo audio input, so any of the analogue sources listed earlier can be connected. If the appropriate AUX input is selected, Movie Maker will 'see' the signal – and away we go.

## Setting up

Movie Maker's wizard responds intelligently to whichever capture device is connected or, if it detects multiple devices, whichever one you select (click on the relevant icon).



So if we select our TV card, for example, the wizard will put up a list of possible input options for us to choose from (plug-in composite video or S-video or internal TV tuner). Once again, the menus are self-explanatory.

## Recording quality

In this context, because we're not using a DV input, the wizard removes the DV-AVI (PAL) option from the **Movie Setting** menu so, instead, we'll probably select the next-best thing – **High quality video (large)** – from the listed options (18.7 p23). The resultant recording quality is then 640×480 pixels at 30fps which is great for replay on the monitor (using the *Windows Media Player* for instance), uploading to your website (18.7 p24), etc.

## Connectors and cables

Whether you opt for an internal ADC card, an external adaptor, or the TV card 'cheat', you need to consider whether it should have either a composite video socket (usually phono), and/or the higher-quality S-video socket (4-pin DIN).

We addressed this topic in detail in 17.12 pp22-24 but, very briefly, the best plan

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is to try to match the chosen video connector to what's available on the analogue device to be plugged in. S-video is preferable to composite but, in many cases (e.g. a standard VCR or low-band camera), a composite connection will be fine for the relatively limited quality video source.

On the other hand, if the source device can output S-video, then go for that. If the device doesn't have an S-video output socket, but can output an S-video signal via a SCART socket, then use a SCART adaptor with an S-Video socket and phono sockets for stereo audio, and connect using standard cables.

Note that the SCART adaptor *must* be the signal OUT variant (or switchable IN/OUT) and, in all probability, the source device must be configured to output S-video (*and not RGB*), usually done via the menu facilities. In menus, PAL or just Video are terms often used to denote the composite video format.

### **Editing the movie**

It isn't our intention to cover video editing in this first article. Suffice it to say that Movie Maker is a very capable application for basic, non-linear editing and boasts an interesting repertoire of transitions, effects and titles.

The problem – as with a large collection of fonts for example – is to resist the temptation to go OTT! What may look great for your kids' karaoke sessions can grate badly in a family wedding video.

There's been some discussion as to which is the most appropriate quality setting to select when saving ('rendering') the edited movie prior to burning the DVD. If the source video was in the digital format (e.g. from a DV camera), then logically one might select DV-AVI (PAL) in the **Movie Settings–Other settings** menu in order to preserve the highest-quality video. However, it should be appreciated that this can easily produce an *enormous* AVI-format file – gigabytes are by no means unusual.

If, however, the source video was in the analogue format (e.g. from a VCR), then arguably it might be perfectly reasonable to select the **High quality video (large)** option instead, even though the final destination will be the DVD. The resultant video file will then be in WMV format and a very small fraction of the AVI-format filesize although, interestingly, rendering times may be of the same order.

### **Burning the DVD**

In all probability, you'll already have some suitable DVD-burning software. It will almost certainly be proprietary, vary with the make of your DVD burner, and have been supplied either with your computer, or burner if bought separately.

We've amassed a number of different titles but they all do a similar job in setting up typically a 'front page' menu, with selectable icons. These show either a thumbnail of the first frame in the movie, or may even display a short video clip which can look very classy indeed.

They all allow various options to be pre-selected but, yet again, these are reasonably self-explanatory, although it's worth tinkering with them to see what they do before making a choice.

Before burning to DVD, *all* Movie Maker's output – saved in either format (AVI or WMV) – will first need to be converted into the PAL/DVD standard MPEG 2 format.

This is done automatically by the DVD-burning software, but it's an enormous number-crunching exercise and, even with the most powerful processor, can be a *very* time-consuming process; typically *five times* the movie length. On our own machines, there's negligible difference in process time when converting from AVI or WMV to MPEG 2, but others report that WMV is much quicker.

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Note that an analogue video source will be captured at 640×480 pixels and 30fps, but this will be converted to PAL standards (720×576 pixels and 25fps) when the movie is rendered and saved.

As expected, movie quality from an analogue source is noticeably less than from a DV camera, but it's well up to what you would expect from a video tape played on a VCR, whether VHS or S-VHS.

### **Getting the kit**

If like us you already have a TV card and DVD burner installed, have Movie Maker (from Windows XP) and DVD burner software, and have the necessary connectors and cables, then no more expenditure may be required.

But if you need to obtain an internal PCI card, or an external converter box, or a TV card with suitable AUX connections, the problem then is that you may be spoilt for choice.

Different units from different manufacturers do pretty much the same jobs and for roughly the same outlay. Basic internal digitiser and TV cards start at around £35, external boxes are a little more, but you could spend £100-£200 on a more capable external box which will handle analogue and digital signals, in either direction (IN/OUT).

However, if your computer already supports Firewire (for connecting a DV camera) and you plan to record to DVD rather than to video tape, then a simple ADC converter card or box (or TV card) will most likely do the job.

The Products pages of manufacturers' websites should give you a starting point; the following links are by no means an exhaustive list:

### **Internal/external ADC cards/boxes**

Pinnacle ([www.pinnaclesys.co.uk](http://www.pinnaclesys.co.uk))

Snazzi ([www.snazzishop.co.uk](http://www.snazzishop.co.uk))

Terratec ([www.euro-tech.co.uk](http://www.euro-tech.co.uk))

### **TV cards**

Aver ([www.avermedia.co.uk/avermedia/products](http://www.avermedia.co.uk/avermedia/products))

Hauppauge ([www.hauppauge.co.uk](http://www.hauppauge.co.uk))

Pinnacle ([www.pinnaclesys.co.uk](http://www.pinnaclesys.co.uk))

CJE Micro's ([www.cjemicros.co.uk](http://www.cjemicros.co.uk)) confirm that the PCTV Rave card they supply has external sockets for both composite video *and* S-video, plus a 3.5mm jack socket for stereo audio. It should automatically be registered as a video capture device by Movie Maker but, at the time of writing, we don't have confirmation of that.

### **Alternative editing software**

Although MS Movie Maker is a basic but very capable application, others may have more extensive facilities. Some video converter manufacturers bundle either their own or third-party video editing software with their products, which may in turn incorporate DVD burner utilities. You pay your money...

We've recently obtained ULead's *VideoStudio 9* (then on special offer at £35 via PC World's website [www.pcworld.co.uk](http://www.pcworld.co.uk)), specifically for its ability to insert 'noddies', as we could do with Irlam's VideoDesk. From the spec, it seems to have much more to offer than Movie Maker, and other titles at around the same prices as VideoStudio, although we've yet to get into the really clever bits such as 'Chroma key'.

We'll look at VideoStudio 9 in depth in a later part.

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