Creating PC Video

Douglas Stevenson & Robert Wolenik

Focal Press

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Boston Oxford Auckland Johannesburg Melbourne New Delhi

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CREDITS

Figure 2–1—Village Media
Figure 2–2—Village Media
Figure 2–3—Sony Electronics, Inc.
Figure 2–4—Sharp Electronics Corporation
Figure 2–5—Canon USA, Inc.
Figure 3–1A and B—Village Media
Figure 3–2—Pinnacle Systems
Figure 3–3A—Village Media
Figure 3–3B—Pinnacle Systems
Figure 3–4—Village Media
Figure 3–5—Village Media
Figure 3–6—Pinnacle Systems
Figure 3–7—Pinnacle Systems
Figure 4–1—Inscriber Technology Corp.
Figure 4–2A—Truevision
Figure 4–2B—Digital Processing Systems
Figure 4–3—Village Media
Figure 4–4—Village Media
Figure 5–1—Digital Processing Systems
Figure 5–2—Strata Inc.
Figure 5–3—Digital Processing Systems
Figure 5–4—Digital Processing Systems
Table 5–1—Village Media
Figure 5–5—Village Media
Figure 5–6—Inscriber Technology Corp.
Figure 5–7—Inscriber Technology Corp.
Figure 5–8—Inscriber Technology Corp.
Figure 5–9A—Village Media
Figure 5–9B—Artel Software
Figure 5–10—Village Media/Ulead
Figure 5–11A and B—Village Media/Ulead
Figure 5–12—Village Media
Figure 5–13A, B, and C—Village Media/Ulead
Figure 5–14—Village Media/Ulead

Figure 5–15—Village Media
Figure 5–16—Ulead
Figure 6–1—Sound Forge
Figure 6–2—Canary Music
Figure 6–3—Sonic Desktop.
Figure 6–4—PG Music
Figure 6–5—PG Music
Figure 6–6—Village Media
Figure 7–1—Village Media
Figure 7–2—Village Media
Figure 7–3—Village Media
Figure 8–1—Village Media
Figure 8–2—Village Media
Figure 8–3—Village Media/Ulead
Figure 8–4—Village Media
Figure 9–1—Village Media
Figure 9–2—Village Media/Macromedia
Figure 9–3—Ulead
Figure 9–4—Ulead
Figure 9–5—Village Media/Ulead
Figure 9–6—Village Media/Adobe Systems
Figure 9–7—Village Media/Adobe Systems
Figure 9–8—Village Media/Real Networks
Figure 9–9—Village Media/Real Networks
Figure 10–1—Village Media/ Plenty International
Figure 10–2—Village Media/ Plenty International
Figure A–1—Adobe Systems
Figure A–2—MacroMedia
Figure A–3—Ulead
Figure A–4—Strata Inc.
Figure A–5—Village Media
Figure A–6—Inscriber Technology Corp.
Figure A–7—Geo-Interactive Media Group

Contents

Preface xiii

1 **The Camcorder–Computer Link** 1

The Stand-Alones 2
Enter the Computer 2
The Event Videographer 3
The World Turned Digital 4
Then Came FireWire 4
A New World of Hard Drives 5

2 **Selecting the Right Camcorder** 7

Which Format Is Right for You? 8
Three-Chip Video Quality 10
The Smaller, the Better 12
Manual Options 13
Power to Spare 14
Zoooooom 15
Variable-Speed Zoom 16
Color Monitors and Color Viewfinders 16

Electronic Image Stabilization 17
External Microphone and Headphone Jacks 20
Edit Control 21
Summary 21

3 **Computer Video Options for Under $500 23**

Computer Controlled Tape-to-Tape Editing 24
Video Capture 24
Adding Audio 29
Choosing Software 29
Adding Titles 31
Make a Movie 32
Bonus—The TV Tuner 33

4 **Building the AV Computer 35**

Selecting Hardware 36
Now the *Big* Question—How Much Will It Cost? 37
The Video Card 38
What About Audio? 41
Fast and Wide Video Drives 42
Going Turnkey 43
Saving Your Work 44
Safety Tips 45

5 **The Home Video Editing Challenge 47**

Linear versus Nonlinear Editing 48
Selecting Nonlinear Editing Software 49
Batch Capture and VCR Control 51
Compression and Resolution 53
Tracks and Layers 54

The Character Generator 55
Special Effects and Transitions 56
Chrominance and Luminance Keying 58
Dongles 61
Adding More Special Effects Through Plug-Ins 64
Creating Digital Title Screens 66
Painting and Drawing Software 66
Computer Monitors versus NTSC Television 72
Putting It All Together 73

6 **Unlimited Audio for Video 75**

The Sound of Music 77
Video Follows Audio 78
Hardware Requirements 79
More Music 80
Strike Up the Band 81
Going to the Next Level—MIDI 82
The Next Sequence 85

7 **Creating Your Own CD-ROM 87**

The Right Stuff 88
Acquiring Images 89
Know Your Limits 89
The Digital Artist 90
Burning Your CD-ROM 91
Avoiding the Pitfalls 93
What About DVD? 94

8 **Your Video on TV 95**

How to Produce Commercials with
Your Camcorder and Computer 95

Starting Your Own Cable Show 102
Shooting the Infomercial 107

9 **Building Your Own Video Website 111**

Getting a Site 112
From Dream to Reality 113
Adding Movement 116
Java and Dynamic HTML 116
Page Layout 118
Internet Video—The Next Level 120
What Is a Plug-In? 122
Getting Your Video and Audio on the Web 122
Live Performance 124
Understanding the Limits 124
A Bit About Bandwidth 125
V-Mail, Video Conferencing, and the InternetCam 125

10 **Video Projects 127**

The Public Service Announcement 128
The Commercial 130
The Music Video 130
The Birthday Party 132

Appendix **Software and Hardware Solutions 133**

Low-Cost Video Cards, Frame and Video Capture, and Simple Nonlinear Editing 133
Video Production Nonlinear Editing Software 134
CD-ROM 136
Art Programs 137
Buy-out Animation and Backgrounds 146

Special Effects and Transitions 147
Music and Audio Software 154
Sources for Copyright-free Music 159
Web Page Design and Internet Video Publishing Software 159
Video Card 164

Glossary 167

Index 177

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Preface

It can happen to you, because it happened to us. In less than ten years, we have gone from our first, full-sized VHS camcorder to a full-time video production company based around a nonlinear editing system. What started out as a simple interest in family memories has been transformed by a trek down the path to better and better quality video productions, a series of choices that has changed our lives and careers.

The message is this: The opportunity is there. Your camcorder and computer have video potential limited only by your desires and imagination. From animation to documentaries, vacation videos to broadcast television, the marriage of the PC to video is a match made in heaven, a connecting link to your creative soul.

My first camcorder was a full-sized RCA VHS, one of the first with a flying erase head. I began shooting and learning about composition, simple editing, and videoing children, relatives, and special events.

The real challenge was editing. Using my camcorder as a source machine and a home VCR as a recorder, we discovered by trial and error

how to create simple videos without a lot of equipment. About then we got the serious bug. We were having fun, and the dream of producing our own videos was glimmering off on the horizon. We wanted more.

At first the computer was strictly a word processor. A few years later it became an indispensable tool for titles and special effects as well as the foundation of a new business in video. Faster than we could imagine, the computer became the very heart and soul of all our video production. With it we can match speeds with the top production houses in the big city, accomplishing tasks that even they could not accomplish only a few short years ago.

Just as suddenly, video no longer simply meant tape and television. New formats such as CD-ROM and the Internet now consume almost as much of our attention as productions destined for tape. Digital video is redefining not only how but where we see and use video.

The purpose of this book is to open the door to the world of PC video. Multifaceted, ever changing, challenging your technical abilities as well as your creative instincts, the convergence of video and the computer can be as simple as a country road and as fast moving as a rocket to the moon. Get ready for a fun ride.

Although the price and capability of hardware may change and versions of software are continually upgraded, the basic concepts behind setting up and using an A/V computer for the most part remain will the same. For this reason we keep the information in each chapter general rather than refer to specific brand names. At the end of this book, you will find an appendix that gives examples of hardware and software to consider and the applications for which they are used. These are but a sampling of what is available, however we endeavor to include most of the primary players in the industry. It is our hope that this will point you in the right direction.

Producer, director, shooter, editor, narrator, actor, animator, music maker—how many hats can one person wear? First, you must believe in yourself. Take things one step at a time, acquiring the necessary tools and hardware, skills, and talents. Before you know it, you'll be amazed at how far you've come.

The Camcorder–Computer Link

IN THIS CHAPTER:

The Stand-Alones

Enter the Computer

The Event Videographer

The World Turned Digital

Then Came FireWire

A New World of Hard Drives

1

When camcorders were first introduced to consumers well over a decade ago, there was no video hobby field. There were no prosumers. There were only broadcast professionals.

The reasons for this were both technical and economic. The equipment to handle postproduction work (refining the video after it's shot) was sophisticated and difficult to use. Typically it cost in the hundreds of thousands of dollars. Very few were likely to pop for that kind of money just so they could have fun making videos. While wonderful titles, special effects, even primitive morphing regularly could be seen on television, in no way could home users attempt it.

Yet, even in the early days, with well over a million camcorders sold a year (current there are closer to 3.5 million sold each year), there was a definite demand for equipment that could at the least do simple editing. And very quickly such tools became available.

THE STAND-ALONES

Stand-alones essentially are black boxes that can perform basic tasks. Among the first were simple editors from companies such as Videonics and Sima. These early machines, often difficult to manipulate, would allow the user to hobble together scenes and even add a couple of wipes and titles. They were primitive, but at the time everyone was excited to have them.

After all, up until then, the basic method of creating a video outside a broadcast studio was "crash editing." Here you played back the tape in the camcorder and recorded it to a VCR attempting to edit scenes by pushing the Pause/Record buttons at appropriate times. Needless to say things didn't always work out smoothly.

Later, companies such as FutureVideo introduced edit controllers, which allowed the user to create an EDL (edit decision list) and automated the basic editing procedures. Soon these included TBCs (time base correctors) to avoid glitches in the video. Separate title makers and simple effects generators (creating a variety of wipes) also were introduced. The home hobbyist could create a video that exceeded the performance of what previously could be done on film, but it still was a far cry from what was happening on broadcast. Today black box editing remains an effective and inexpensive way of getting into postproduction. Except, modern machines are more powerful, easier to use, and less expensive.

ENTER THE COMPUTER

What about all those wonderful effects that can be seen in science fiction and other movies? Can these, too, be done at home?

Yes, and it all began largely with the introduction of one machine, the Video Toaster by NewTek at the end of the 1980s. The Video Toaster used an Amiga computer as its base and allowed any user to create all sorts of mixing and effects (some even better than what regularly was seen on television) for the then unheard of price of under $10,000 (under $5,000 for the basic system). Suddenly, the world of video changed. The introduction of computer-based postproduction made equipment, if not necessarily simpler to use, certainly much more effective and sophisticated.

While the Video Toaster reigned supreme for nearly five years (it was so good it was even used to create special effects on many television shows),

it eventually was superseded by a wide variety of programs that could create virtually anything in video on both Macintosh and Wintel platforms.

Stand-alone products continued to increase in quality as well as work with digital mixers (allowing true A/B rolls, also called dissolves) introduced by Videonics and a host of other superhigh-quality character generators and effects machines. Most of these cost under $2,000.

Bigger advances, however, came about on the computer side. Soon a host of programs, often costing under a $1,000, were available to handle editing of scenes, adding titles, creating wipes, and much more. There were even morphing programs that could duplicate, albeit much slower, almost any effect seen in the sci-fi movies.

With the introduction of computers it became possible, at relatively little cost, albeit slower, to do anything at home that could be done in the broadcast studio. As a result, a new breed of videographer emerged.

THE EVENT VIDEOGRAPHER

Since the first camcorders were introduced in the 1980s, people had been using them to record weddings, bar mitzvahs, family events, and so on. Usually these were strictly amateur (that is, without pay) efforts. While a "true photographer" might be hired to take photographs or even film a short movie of the event, an amateur videographer friend or relative might supplement the memory-capturing with a video.

However, that changed when two things became clear: First, through the use of the Hi8 and Super VHS formats, videos could be taken that were just as clear as the old Super8 movie films. Second, through the use of the Video Toaster, digital mixer, and later computerized programs, postproduction techniques could rival those of the professionals.

Suddenly that amateur, who previously would simply record a wedding and then turn a copy over to the family, could edit the tape, blending scenes, adding music, titles, wipes, and more. In short, the wedding tape became a real video production, something of true value, something people were willing to pay for. Thus was born the event videographer, a person who could charge, often high amounts, for videotaping an event, initially mostly weddings.

Today, most events that are significant enough to warrant a photographer, also warrant a videographer. Indeed, with the development of still

video allowing individual shots to be pulled from camcorders, the videographer can supersede the photographer, in short be all that's required.

THE WORLD TURNED DIGITAL

While it may seem that the blending of camcorders with computers was a happy marriage, initially it was not. There was a huge problem. Camcorders, although basically digital instruments, recorded onto videotape in an analog format. (VHS, S-VHS, 8mm, and Hi8 are all analog formats.) On the other hand, computers were digital instruments. They understood only the world of ones and zeros.

Getting the video shot with a camcorder into the computer so it could be manipulated (not just simply played on the monitor, which could be done with a simple capture card) required the use of a digitizing board. In the mid-1990s the big scramble was to come up with computer boards that could take that analog signal, convert it to digital, and after it had been manipulated by the computer, convert it back to analog for recording onto videotape. The first computerized video studios essentially were hybrids—analog and digital combined.

This produced some unwanted results. Every time a scene in an analog format is copied onto videotape, some of it is lost. Make four generations of copies (a copy of a copy of a copy of a copy) and even Hi8 or Super VHS is unwatchable.

Using a hybrid system allowed postproduction work to be done making only three or (in some cases) two generations. But, it was still only a work-around solution that really wasn't satisfactory. A pure digital system, from camcorder to computer, was needed.

THEN CAME FIREWIRE

Such a system became possible in the late 1990s with the introduction of FireWire (1384 protocol). This system allowed computers to connect digitally with a wide variety of peripherals, including camcorders. At the same time, camcorders were introduced that recorded digitally onto a tiny

cassette. The new DVC (digital videocassette) format was capable of up to 500 lines of horizontal resolution (100 better than Hi8 or S-VHS).

Initially, very few of the new digital format camcorders had a FireWire port allowing them to link directly with computers. However, that changed after a couple of years, when virtually all digital camcorders had the port. Today, almost any digital camcorder can play back in digital format directly to a computer. As a result, there is no generational loss when getting into postproduction.

A NEW WORLD OF HARD DRIVES

Another development that occurred in the late 1990s was the introduction of superfast, superlarge hard drives. In the early years of computers, storing video on a hard drive was impractical. Only a few seconds of video would require megabytes of storage. A minute or less would fill up an old hard drive. Therefore, a hybrid storage system, using the old analog tape, was necessary. A few seconds of video would be pumped into the computer, manipulated, then sent back to the tape and another few seconds pumped—an awkward and inefficient system at best.

However, the introduction of multigigabyte hard drives and RAID systems changed all that. Suddenly 10, 20, 80, or more gigabytes of storage could be made available, at remarkably low prices, often only a few thousand dollars. Further, these were true A/V drives with fast throughput speeds. (They could record the video as it was played without dropping frames.)

Suddenly it was possible to have a true digital editing system from camcorder to storage. Record digitally, transfer the entire scene (many minutes, sometimes as much as an hour's worth) directly into the computer, manipulate it inside, and then store it digitally either on a removable hard drive or, as an alternative, on a CD or later a DVD. The only time it was necessary to transfer to analog tape was to create a copy to sell to someone.

Better computers, with blistering speeds of 500 MHz and higher and huge amounts of RAM approaching 1,000 MB, made all of this work even better. The day of the "home" postproduction studio arrived.

This is not to say that, as this is written, there are no problems. Artifacts sometimes crop up in the video. Software often doesn't work easily (or