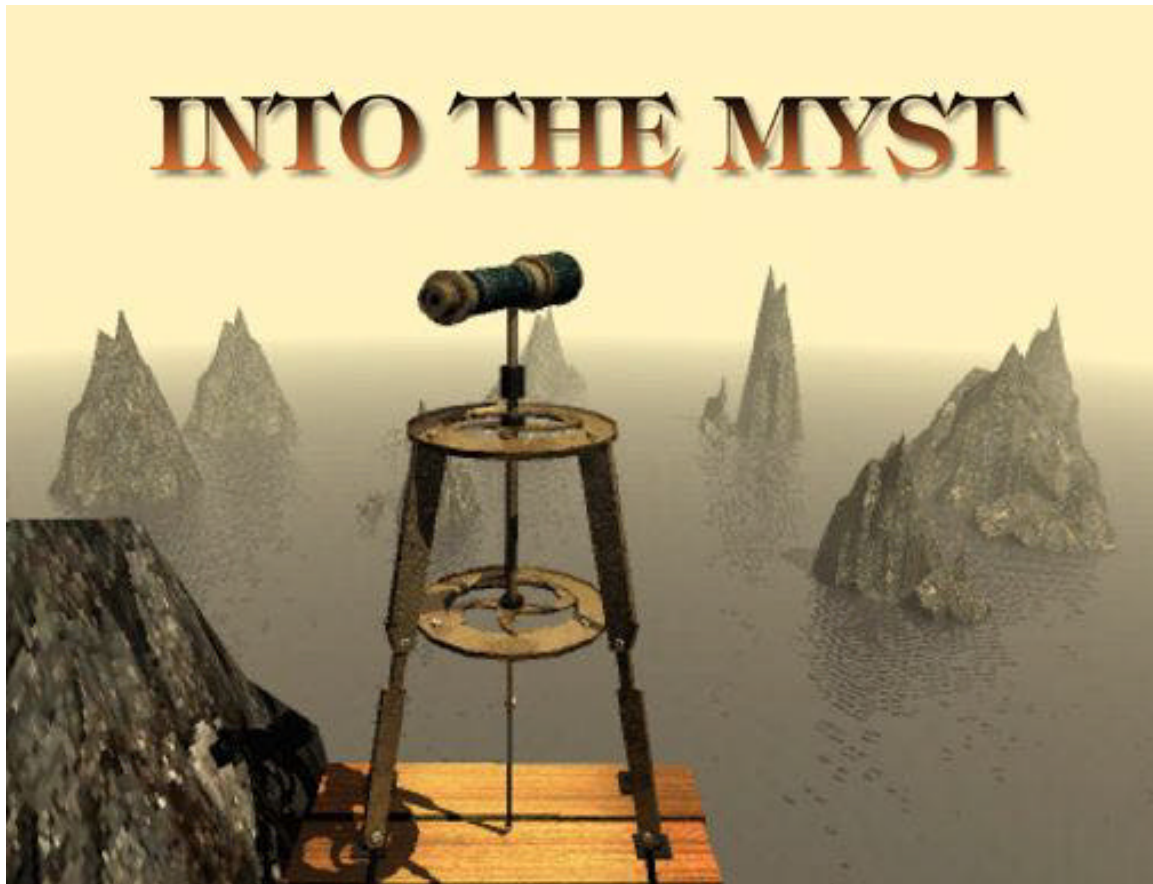


Videography February 1997
Windows Video 1997 Special Report



A view from the Stoneship Age, from the CD-ROM game *MYST*, published by Broderbund Software and Cyan, Inc.

By Craig Birkmaier

It's that time of year, here in the Northern Hemisphere of this island world we call *Earth*, when it is common to awaken to a landscape shrouded in mystery. On days like this our knowledge of the world that lays just beyond the mist is essential--we are able to navigate the clouded landscape based on experience...and in our faith that the world did not change suddenly over night.

It's that time of year, here in the world of professional video, when we raise our sights to the horizon and peer into the mist, looking for clues about the future of the medium we use to express our creativity--not to mention make a living with. It's the time when we begin to anticipate the introduction of new tools we will use to earn a living in the years ahead.

For the developers of these tools, it's that time of year when the pace quickens. Product managers update prominently displayed countdown calendars on a daily basis--only 30...29...28...days 'til NAB.

As we head into NAB '97, prevailing visions about the future of video have been obscured by recent events. An oppressive fog clings to the emerging digital landscape.

The familiar analog world that has defined the medium of television for the past 50 years is rapidly being transformed into a new and confusing digital world. Abbreviations such as DVB, DVC, DVD, DVE, DBS, DTV, and MPEG are attached to digital video technologies that seek to extend the familiar analog television experience. Other terms, such as *ActiveX*, *Windows 95*, *Windows NT*, *Mac*, *NeXT*, *SGI*, *Sun*, *QTML*, *Java*, *HTML*, and *WWW* are attached to digital technologies that seek to replace analog television with an entirely new medium.

Early adopters have been exploring the emerging digital landscape for most of this decade, gaining experience with new *open-system* digital media tools. For these seasoned travelers, exploring the clouded digital landscape is an exciting challenge.

A majority of video professionals--perhaps 75 percent--have postponed conversion to the new tools, waiting for the mist to clear. Many of those who attend NAB '97 will awaken to the reality that this fog may not lift for years.

The Cliff Effect

This is to be the NAB when digital television broadcasting will finally get some legs under it, based on FCC approval of the Advanced Television Systems Committee (ATSC) digital television broadcast standard (DTV). The standard would provide the required certainty to clear the mist and enable a new era of high-definition digital television; it would define the capabilities of the appliance that will replace the televisions that exist in more than 99 percent of the homes in the United States.

But the ATSC standard attempted to perpetuate the analog television experience, including the use of interlace scanning, a compression technique the perceived advantage of which is shrouded in mystery. A cloud has been hanging over the advanced television process for nearly a decade, giving most video professionals good reason not to venture outside the world with which they are familiar, lest they fall off the proverbial digital cliff.

At the eleventh hour, however, the vision of those who developed the ATSC standard was fundamentally altered. The FCC asked participants in the debate over the DTV standard to resolve their differences. On November 25, 1996, representatives for broadcasters, receiver manufacturers, and the computer industry reached an historic agreement about the future of television; on December 24, the FCC ratified the agreement, approving the proposed ATSC standard, with *exceptions*.

The agreement removes the proposed video formats from the standard. MPEG-2 Main Profile at High Level defines the video encoding technology and limits on performance; there are no mandated formats or requirements for HDTV broadcasts. Issues related to levels of resolution, aspect ratio, and the use of interlace will now be resolved in the marketplace. The agreement also allows broadcasters to get into the business of data broadcasting, an opportunity also shrouded in mystery.

The cloud around DTV, and the plot of this story immediately thickened. Broadcasters and receiver manufacturers announced intentions to move forward with their vision as if nothing had happened. The computer industry announced that they are now free to develop an alternate vision, a new medium that integrates the worlds of television and the computer.

Two years ago in this annual VIDEOGRAPHY report about the Video and the PC, I related the story of "The Computer at the End of the Universe." A computer so powerful that the fabric upon which it is based is humanity; that *computer* is the Internet.

When last year's report, "The Long Dark Development Time of the PC's Soul" was published, Microsoft was deep in the process of re-inventing itself around the Internet. With Microsoft's vision focused there, little has changed in the world of professional video on the PC in the past year. Everything has changed, however, when it comes to what Intel's Andrew Grove has characterized as "the battle for eyeballs"; the battle to create the information appliance that will replace the TV in the family room.

The Ten-Ton Gorilla From Redmond

What caused broadcasters and television receiver manufacturers to accept a compromise with an industry that seemed completely unrelated to television when the advanced television process began?

- The Internet, for one thing. Millions of eyeballs now spend "prime time" viewing hours 30 inches from a computer display. The consumer electronics industry is responding with products like WebTV, which, *if* successful, take more eyeballs from the broadcaster.
- Market trends, for another. The consumer electronics industry is experiencing declining sales of TVs, VCRs, and other consumer electronics gear in the face of double-digit growth for home-entertainment computers.
- And don't forget those declining broadcast network ratings thanks to competition from cable and DBS.

When it comes to winning the war for eyeballs, the most powerful force at work in our emerging digital world is perception. Too often, the best technology does not win in the marketplace--VHS vs. Betamax, Macintosh vs. PC. When things are left to the marketplace the name of the game is **marketing!** Building and maintaining momentum is everything.

Microsoft came to the DTV bargaining table and essentially told broadcasters that the path they wish to follow leads to the cliff. Craig Mundie, senior VP of Microsoft's consumer platforms division, created the perception that it was in the best interest of broadcasters and receiver manufacturers to change the rules of the game, or risk getting in the way of the Ten-Ton Gorilla from Redmond.

This perception was driven home by real-world experience on the battlefield of the marketplace. For years, Apple carried the water for the computer industry in the advanced television process, raising flags about problems with the proposed DTV standard. Apple was able to do this based on the fact that they were among the first companies to explore the convergence of video and computing. Commodore was actually there first, but dropped out of the game early, squandering the Amiga computer's wonderful technology, which they had bought but never appreciated. While Microsoft was promising the world that they would deliver an operating system (OS) that works "just like a Mac," Apple was creating the infrastructure for the digital-media authoring tools that dominate our business today.

In the end, however, while Apple and Microsoft sat on the same side of the table in the DTV negotiations, Apple's vision had little to do with the outcome. The perception that broadcasters and consumer electronics companies might find themselves in the same endangered position as Apple heavily influenced the outcome of the negotiations.

Considering the substantial technological advantages that Apple has delivered to the users of personal computers, how is it that they squandered so many opportunities to beat Microsoft at the PC game? The answer, as you might suspect, is *perception*.

Microsoft established a beachhead in enterprise computing; Apple secured the education market and the "rest of us" position. Unfortunately, instead of driving the Mac brand as the information appliance for the masses, they allowed "the rest of us" to become the smaller group of people not content with going along with the crowd--the creative types who are willing to buck the establishment and justify why we should use different tools.

The turning point came as Apple and Microsoft moved the playing field from the enterprise to the home. The prevailing perception was that people were buying home computers as an extension of work; the home computer was perceived as a required power tool for climbing the corporate ladder. Apple focused its efforts on interoperability with the PC at the office, and as a multimedia platform to help educate the kids. Microsoft focused its efforts on turning the multimedia PC into a game machine.

Apple's strategy was *doomed* (pun intended) from the beginning. They told their developers that the Mac was not a game platform. Microsoft told their developers to make a

play for the kid in all of us. I knew it was over when my son started complaining that all the cool games are on the PC.

Game over; Microsoft won.

New Game

For those of you who are in shock, thinking that I just threw in the towel on Apple, think again. There's no denying that Microsoft has won this round in the battle of perception. But exactly *what* have they won?

Sure, they dominate the enterprise, and they dominate the home PC market. But hardly anyone believes that the "out-of-the-box experience" offered on a Windows PC is going to help Microsoft win the battle for eyeballs in the family room. Consider the following reality check, provided in a conversation with Satjiv Chahil, Senior VP of Corporate Marketing for Apple, in the March 1996 issue of VIDEOGRAPHY.

"Today, with all of the hoopla, only one out of three people in America have PCs. If you look at Europe it's one out of five. If you look at a technologically advanced nation, such as Japan, it's one out of ten. That isn't changing the world at all!"

The perception that Microsoft can take over any market by merely focusing their attention on the opportunity is not founded in reality. For example, we have been hearing that "this will be the year of the PC in professional video" for at least three years. We have watched as Microsoft has gobbled up companies such as Softimage and recruited some of the best talent in the world of digital media--and we're still waiting for the payoff (see "Softimage's Digital Studio: Turning a Product into an Environment," page 74).

What we *should* be asking is where does *Microsoft* want to go today? If you think that the end-game is to eradicate Apple, think again. Where would they be without the R&D department in Cupertino?

As this month's VIDEOGRAPHY clearly shows, Windows PCs are making great strides in professional video. But even if you could convince every last member of the Mac faithful in the professional video business to throw in the towel and move to NT workstations, it would barely show up on Microsoft's bottom line. Microsoft's real target is obvious, and it's making the companies that currently dominate the consumer electronics markets very nervous.

The new playing field is the family room. And the game is a new medium called *digital television*.

The Interface That Will Replace Windows

Recently I stumbled upon a most intriguing commentary, written by Jesse Berst, Editorial Director for the ZDNet AnchorDesk.

"Lately I've been thinking about where we go after Windows, how the human/computer interface will evolve, and what it means for computer professionals and enthusiasts. Indeed, I believe the first primitive versions of the next interface have already been delivered.

"They're called video games.

"The computer era of tomorrow will be created and controlled by the children of today. Kids don't think of computer interaction in terms of menus and windows, but of games. This points to two developments: a new kind of interface, and a new kind of collaboration.

"When you say, 'they think differently than we did' you're not just mouthing a cliché, you're describing an actual anatomical difference. Because of patterns etched during their early years, baby-boomer "TV generation" brains are wired differently than those of the generation before, which grew up without TV.

"The video-game generation sees things differently, too. Think about the spatial metaphor that dominates most games. Typically, the hero wanders rooms interacting with objects--weapons, treasures, enemies, other users. Now think about the expectations engendered by this mindset. Gamers expect:

- to be 'inside' the interface, represented by an avatar or character (contrast this with today's metaphor, where users stand apart from the interface and interact with it);
- to navigate 'through' the environment;
- to learn by trial and error, with no penalty (you can always come back to life);
- to have clues everywhere in case they get lost;
- to encounter objects that are 'alive' and actionable."

Perhaps Berst is too focused on the "island world of the PC" to realize the profound implications of his commentary. The interface he describes will not only replace Windows, it will become a fundamental part of the experience that our children will expect from the information appliance that will replace the TV in the family room. Already, they hook up their game consoles to the TV; now they can browse the Web and play networked games in the family room.

Does anyone really believe that the TV set in the family room will continue to be used only as a *window* into a world now controlled by television, cable and satellite broadcasters, and the motion picture studios? Here's another opinion on the subject--mine--from the January 1997 issue of TELEVISION BROADCAST, which can found at the new TVB web site at <http://tvbroadcast.com/digital.htm>.

"The social implications of the shift to digital television will be far more profound than a sharper image and 3D sound. This is an entirely new medium. It will leverage other communications infrastructures to provide the consumer with something that was missing from our first attempt at a visual mass medium: the ability to control the vision, rather than being manipulated by it."

A Worldly View

The technology behind hot new game platforms such as Sony's Play Station and the Nintendo 64, is based on an entirely new way of looking at the world of interactive digital media. Although the images are rendered to a 2D screen, these games take the player inside a 3D world. In this world it's possible to change point of view; the player can take the point of view of a character, or watch the character they control from a third-person perspective. This is analogous to the way that videographers and cinematographers can change viewpoints when capturing 2D images of the real world, or the surreal world of a soundstage.

For the most part, the GUI (graphical user interface) or windowing interface to a PC is based on a 2D metaphor, similar to a stack of papers. The papers can be spread out on a desktop, and their priority can be re-ordered. The desktop publishing revolution took advantage of this metaphor, allowing the graphic artist to arrange visual objects and text using the same stacking relationship--any illusion of depth comes from the artist's ability to scale the size of objects relative to one another. This is analogous to the early 2D digital video effects devices, which provided control over the size and position of a scaled image.

In recent years both desktop publishing and video have benefited from the ability to manipulate an image in what has become known as 2.5D space. The image remains a plane, but it can be placed into perspective, rotated, and positioned along a Z-axis to simulate distance from the camera. This allows planar objects to be manipulated as if they're in a 3D world.

The *perception* of reality requires that objects near the viewer be three-dimensional. If we change point-of-view we may see surfaces of the object that are obscured from another point of view. On the other hand, images that are far away appear as if they are on a plane located an infinite distance from the point of view. These concepts are reflected in the technology behind the computer-generated images we now take for granted in the latest Hollywood blockbusters and big-budget commercials--3D modeling/rendering and virtual sets. Add the ability for the viewer to change the point of view and it's called virtual reality.

The desktop workstations used by many video professionals today have dual 200 MHz processors, 100 MB of RAM, and a 64-bit graphics board. In terms of what's required to

compete with the *virtual reality* delivered by a \$200 television receiver, however, this level of performance is just barely sufficient to do things that are interesting.

If, however, we put this kind of processing power together with a 3D acceleration engine, an MPEG-2 video decoder, an AC-3 surround sound audio decoder, a DVD-ROM drive, and modems for DBS, DTV, and a telephone or two-way cable, we suddenly find ourselves in another world...a world that blows the doors off the experience delivered by today's \$200 TV. This is the kind of information appliance that the computer industry would like to put in your family room.

At this point you're probably asking, "at what price?" Clearly this is not a \$200 product. Probably more like \$2,000 plus the cost of a large-screen display. So why are the consumer electronics companies worried?

It turns out that their vision of a DTV receiver isn't cheap either. Their own estimates place the cost of an all-format (SDTV and HDTV) receiver at \$1,500 above the cost of today's large-screen displays. Add a DBS decoder and a DVD-video player and you're playing in the same world as the computer industry.

Active Movies

Where does Microsoft want to go today? The following information can be found on the Microsoft Web site, in a January 1997 announcement about The Simply Interactive PC.

"The Simply Interactive PC (SIPC). is the vision guiding many of the investments that Microsoft is making in software and hardware advances to make the PC as simple, convenient, and approachable as an 'appliance.' At WinHEC 96, Bill Gates unveiled the technologies of SIPC that will make the PC platform the center of entertainment, communications, and productivity in both home and office, providing the ease of use and convenience of a consumer appliance."

Could initiatives like SIPC be diverting resources away from projects of interest to the video professionals creating today's linear video and tomorrow's interactive digital media content? Take, for example, the Active Movie project, Microsoft's latest attempt to build a digital media architecture to compete with Apple's QuickTime.

At NAB '95 Microsoft announced that Active Movie would provide support for the requirements of video professionals and that it would be available on the Mac platform as well. Version 1.0 has been released for the PC, missing many of the features required to support professional applications; the Mac version has not been released. Companies such as Avid, Matrox, and Truevision have developed proprietary extensions to Active Movie, enabling professional-quality nonlinear editing systems to be delivered since the second half of 1996. Additional professional features will be available in Version 2.0, which is currently scheduled to ship in June.

Given the considerable difference in market size for delivery platforms versus content-creation platforms, who could blame Microsoft for giving the mass market priority? Especially when one takes into consideration the magnitude of the problems that must be solved to deliver on the SIPC initiative.

QuickTime For Windows, and...

If you spend much time in Cupertino these days, you're likely to encounter a new abbreviation that is guiding the latest restructuring at Apple. The acronym is DSUV, which stands for *distinctively superior user value*. Simply stated, Apple wants to enable "best in class products," building upon the ease of use that has characterized the Apple computing experience.

One such "best-of-class product" is the game *Myst*. In the three years since its introduction, *Myst* has sold almost three million copies worldwide, making it the best selling CD-ROM game of all time. *Myst* was the first in a new generation of games that takes you inside the interface. The game leveraged a wide variety of Apple technologies, including Hypercard and QuickTime, to create a virtual world filled with mystery.

The experience gained by Apple and the game's designers, Rand and Robyn Miller, is reflected in the latest versions of QuickTime, QuickDraw 3D, and QuickTime VR. These are the core technologies inside Apple's cross-platform environment for authoring and delivery of digital media content, the QuickTime Media Layer (QTML).

To enable this level of "virtual ubiquity," Apple is extending the reach of QuickTime to every major computing platform. Sun, SGI, and IBM are working with Apple to port QuickTime to Solaris, Irix, and OS2. In order to move into the world of Windows--Windows 95 and Windows NT--Apple has enlisted support from 12 co-developers and a long list of companies that will use QuickTime for Windows.

"Apple Computer has a reputation for providing best-of-class multimedia technology for Macintosh customers--our goal is to now set a similar benchmark for Windows developers," explains Mitchell Weinstock, Product Marketing Manager for QuickTime for Windows. "The endorsements of 49 leading Windows and multiplatform vendors demonstrates the industry need for a unifying OS-independent standard for multimedia. Our goal is to work with any and all interested vendors to make QuickTime, and QTML, the unifying industry standard solving the development needs of our collaborators and customers."

QuickTime Version 2.5 is currently shipping for the Mac, and a new software codec for playback of MPEG-1 video was just released. QuickTime for Windows Version 2.5 is in beta test as this is written; it will be released prior to NAB, in April.

The Mist is Clearing!

All of this should come as good news to video professionals who have long desired the ability to use Windows-based PCs as a platform for the creation of high-quality video content and new forms of digital media. A wide range of options will be available to those who are looking for Windows-based PC tools at NAB.

- They will be able to choose the media architecture that best meets their requirements--Active Movie or QuickTime.
- They will be able to choose the OS that best meets their requirements--Windows 95 or Windows NT.
- And they will be able to choose from a wide range of new tools enabled by all of the effort that has been expended to turn the PC into a viable platform for the authoring of digital media content--many of these tools are described within this special report on Windows Video '97.

Does this mean that The Ten-Ton Gorilla from Redmond is now in the position to claim the hearts and souls of the rest of us?

No, but they're finally in the game.