Voyager Company CD-ROMs:
Production History and Preservation Challenges of Commercial Interactive Media

By Jeff Martin

During the early to mid-1990s, the heyday of the commercially produced interactive CD-ROM, some of the most widely praised and best-selling titles were released by Voyager Company (in operation from 1984 to 1997). Voyager's pioneering titles displayed a consistent level of innovation and creative design combined with intelligent content—the best of what the format had to offer[1]. For these reasons, Voyager's output is of particular value to historians and preservationists of digital media. Yet, like all digital media, Voyager CD-ROMs have faced rapid preservation challenges due to operating system and software obsolescence. This paper will look at Voyager's corporate history and programming practice and propose an approach to the preservation of its titles.

Corporate History

The Voyager Company was founded in 1984 by Bob Stein and three other partners, including Aleen Stein, Bob's wife. Voyager first made a splash in the mid-1980s with its Criterion Collection laser discs: high-quality transfers of classic films that generally included extras like commentary tracks, still galleries, and trailers—all the features that would later help make DVDs such a successful consumer product. Its first laser disc release, in 1984, was *King Kong* (1933).[2]

Stein, the driving force behind the company, described himself as a Maoist and publicly refused to pursue profit over quality. He also established the company's motto, "Bring Your Brain."[3] *The New York Times* described Voyager as "the single best source of stimulating and innovative titles for grown-ups."[4]

Voyager's first CD-ROM, released in 1989, was the CD Companion to Beethoven's Symphony No. 9, which brought together a reproduction of the symphony's printed score, an audio recording by the Vienna Philharmonic, and commentary. It was the first of several music-based titles Voyager produced. Throughout its thirteen-year history, Voyager used the book as the model for most of its titles. Colin Holgate, a programmer who worked for Voyager between 1992 and 1996, described the company's popular CD-ROM version of the Beatles film *A Hard Day's Night* as "a coffee table book with the movie attached."[5] Many titles were based on literary works, including Arthur Miller's play *The Crucible* and Art Spiegelman's graphic novel *Maus.* [

The company's focus on book-structured titles was furthered in 1993, when it released software that allowed consumers to create their own electronic books. The software, called Expanded Book Toolkit, retailed for less than $300 and gave consumers the capability to add search engines, art, sound, and QuickTime movies to text files, creating floppy disks that emulated the company's CD-ROMs[6]. Also in 1993, Voyager joined with other CD-ROM producers to sell their CD-ROMs in bookstores—another sign of the company's view that the new technology could be equated with books. At the time, Stein said:

> The best bookstores are wonderful places to browse a wide selection of works and typically provide a high level of customer service. We wanted to bring that comfort, selection of works, and service to the buyer of interactive software. It makes sense because these products are as much like books as they are like software, and the shopping experience should be similar.[7]

In addition to their book-based titles, Voyager also released more experimental and nonlinear projects, including CD-ROM titles such as Laurie Anderson's *Puppet Motel*, The Residents' *Freak Show*, and composer Morton Subotnick's *All My Hummingbirds Have Alibis.* In 1996, Voyager released *First Person: Mumia Abu-Jamal Live from Death Row*, which highlighted the case of the Pennsylvania man sentenced to death for a crime that many believe he did not commit. The title was created—from start to finish—in five weeks.[8] A company press released stated: "Voyager is proud to present such a significant voice on issues of great immediacy and relevance."[9]

The Abu-Jamal title was not the only Voyager product to court controversy. In 1995, a minor storm erupted because Voyager's CD-ROM *Who Built America?*—which touched on such topics as homosexuality, abortion, and birth control—was bundled with other software installed on Apple computers that were distributed to schools. After being dropped briefly, the title was eventually restored to the bundle.[10]

By 1996, despite its continued high profile, Voyager's revenues had stagnated and the company was consistently in debt. Several reasons were listed for the company's financial problems:

> Stein set out his own plan of action in late September of 1996, identifying intermediate and long-term objectives. Key obstacles to wider CD-Rom acceptance he listed as being fivefold: insufficient market volume of non-game titles; Apple's chronic failure to upgrade HyperCard (the staple software on which Voyager became over-dependent); poor distribution for anything but games and children's titles; the lure of the Internet, which captured much of the free time people were prepared to devote to electronic browsing; and, finally, the fact that "the desktop is not a conducive environment for using the rich titles that Voyager is known for producing".[11]

Bob Stein left the company in late 1996. Today he is the C.E.O. of Night Kitchen, which he founded shortly after leaving Voyager. He is also on the board of The Institute for the Future of the Book, which describes its mission as "to play an important role in developing the form and function of books in the digital era."[12]

Programming Practices

In terms of approaching the preservation questions presented by Voyager titles, the single most useful part of my research was a telephone interview with Colin Holgate. The titles he programmed for Voyager include *This Is Spinal Tap*, *The Day After Trinity*, *The Annotated Alice*, and *Our Secret Century* (for which twelve volumes were produced and ten were released before Voyager shut down in 1997.) I found the following information—provided by Holgate in our telephone conversation—relevant to the discussion of CD-ROM preservation:

- **Software Choices**

  Many Voyager titles—including nearly all the book-based titles—were programmed using the Apple software HyperCard. Voyager was one of the earliest adopters of this software, working with Apple as a Beta tester prior to the software's introduction in August 1987. The choice was logical; HyperCard, modeled around the idea of a stack of cards, closely emulated the behavior of a book. Unfortunately, Microsoft offered no programs with similar capabilities for PCs, so Voyager titles using HyperCard were programmed on Apple computers and then farmed out to a subcontractor to reprogram the cross-platform version for PC. (For this reason, I would argue that future preservation of Voyager titles should be focused on their original Mac programming for use on Mac machines—assuming, that is, that Mac computers will remain available as such!)

  Holgate did use other programs for certain cases. *Our Secret Century* needed to be programmed cross-platform from the beginning, so he used Oracle Media Objects; C was the best way to manipulate all of the visual elements for *This Is Spinal Tap*.

- **System Requirements**

In determining the system requirements for Voyager titles, programmers were constrained by two factors: first, many of their CD-ROMs were considered to be educational, or at the very least, "edu-tainment." The general perception was that computers in the academic world, such as those in high-school computer labs, would be less sophisticated than those in the home or office markets. Second, because Voyager had a tight budget, programmers were working on relatively outdated machines. For example, Holgate programmed *A Hard Day's Night* (1993) on a Mac IIsi, with a 20 MHz processor and 17 MB RAM—a computer first released in 1990 and discontinued the year the CD-ROM was produced. The general feeling, said Holgate, was that if the titles worked well on Voyager's computers, they'd work well on anyone's.

- **Forward Compatibility**

  Then, as now, the issue of forward compatibility was nearly impossible to consider—there was simply no way to know what software and hardware manufacturers were going to do. In particular, Holgate said, there was no way to know that HyperCard, a program launched with great fanfare, would be completely abandoned by Apple relatively soon after its introduction.

- **Archiving of Elements**

The critical variable in Voyager's archiving of elements was storage space. Programmers were generally assigned 1GB hard drives to hold all of the elements relevant to a project—which seemed sufficient at the time because, as Holgate put it, "the whole thing couldn't be more than? 650 MB anyway." Since many Voyager titles were based on laser discs, the video elements used in CD-ROM production were generally available if needed. Holgate also mentioned discussions in which producers said, "Let's keep this 240x480 uncompressed as a backup in case we ever need to remaster," though today a file of that size would not be considered a master video element.

- **Preservation of Code**

  Perhaps the single most surprising—and heartening—fact I learned from speaking to Holgate is that he practiced his own means of preserving and ensuring the accessibility of the code for the CD-ROMs he programmed by including it on the "shipped discs"—the CDs actually sold to the public. This means that even for the least popular Voyager CD-ROMs, thousands of copies of the underlying code still exist.

Current Disc Performance

The first Voyager title I reviewed (*Our Secret Century*), was, happily, still functioning reasonably well with current Mac operating systems. A return to the

Voyager catalogue revealed that this was not necessarily true for all titles, as demonstrated by the following four examples.

TITLE: *Exotic Japan*

DATE OF MANUFACTURE: 1991

SOFTWARE SUPPLIED: MacroMind Player 2.0.1

FILES: 29 files, type unidentified. **SYSTEM REQUIREMENTS:** Macintosh (Classic, Plus, Portable, LC, SE, or II series); Mac OS 6.0.5 or higher; HyperCard version 2.1

CURRENT PERFORMANCE:

MAC OS 8.5.1: HyperCard visuals work properly. Audio, however, plays completely randomly. Links to play audio do not work. Appears to play straight through all audio clips on the CD-ROM rather than respond to mouse clicks.

MAC OS X: HyperCard works in Classic Mode—images only. Much distortion/displacement of text against backgrounds. Two icons appear on desktop: “Exotic Japan” and “Audio CD.” Audio CD contains one 47:00 track that plays fine and one 5:29 track that iTunes does not recognize.

TITLE: *All My Hummingbirds Have Alibis*

DATE OF MANUFACTURE: 1992

SOFTWARE SUPPLIED: MacroMind Player 3.0

FILES: 17 files, type unidentified. **SYSTEM REQUIREMENTS:** Mac OS 6.0.7 or higher; 13-inch color or grayscale monitor; Mac-compatible CD-ROM drive; headphones/speakers; CD-ROM Drivers

CURRENT PERFORMANCE:

MAC OS 8.5.1: Starting program, desktop is still visible behind display window. Program does not function properly and eventually crashes computer.

MAC OS X: Two icons appear on desktop: “Hummingbirds” and “Audio CD.” Error message: “Not enough memory to run MacroMind Player.” Audio CD files will play in iTunes. “Hummingbird” files will not play.

TITLE: Stravinsky’s “The Rite of Spring”

DATE OF MANUFACTURE: 1992

SOFTWARE SUPPLIED: HyperCard 2.1

FILES: 4 HyperCard documents

SYSTEM REQUIREMENTS: Mac OS 6.0.5 or higher

CURRENT PERFORMANCE:

MAC OS 8.5.1: HyperCard program works well; some distortion of fonts (overlap). Audio plays properly in conjunction with annotations in HyperCard stacks only occasionally. When entire Stravinsky piece is played through, annotation cards do not always follow in proper sequence.

MAC OS X: Ejected the CD repeatedly.

TITLE: *Who Built America?*

DATE OF MANUFACTURE: 1993

SOFTWARE SUPPLIED: QuickTime 1.6.1, HyperCard 2.1

SYSTEM REQUIREMENTS: Macintosh computer with a 68020 or higher processor (as of summer 1993, this included the Macintosh SE/30, Classic II, and all models in the Macintosh II, LC, Performa, Centris, and Quadra lines, and Powerbook models 140 and higher, including all PowerBook Duos); 4 MB of installed RAM in System 6, 5 MB of installed RAM in System 7; a hard disk with 7 MB of free space—8 if you need to install QuickTime and HyperCard; a 640x480 monitor or larger w/256 grays; Mac OS 6.0.7 or higher

CURRENT PERFORMANCE:

MAC OS 8.5.1: No discernible problems. Appeared to function as intended.

MAC OS X: Ran in Classic Mode. Changed display to 256 colors, monochrome (sepia.) Could not find the “Home” document (repeatedly) for HyperCard. Played most functions properly, though sometimes inexplicably asked for more memory to be allocated to HyperCard, even though it had been. Did not resize display to 640x480 automatically. Overall performance good but finicky.

These four examples demonstrate that the early Voyager titles are in the greatest danger of becoming inaccessible due to software and hardware obsolescence.

What is striking is the complete failure of the *Exotic Japan* CD-ROM compared to the relatively good performance of *Who Built America?,* a title manufactured only two years later.

Preservation Strategies

Based on my research, which included the discussion with Colin Holgate and the testing of several Voyager CD-ROM titles, I offer the following observations regarding preservation.

1) Code

Unlike certain interactive artworks, the code underlying Voyager titles is not part of the work; it is a purely functional tool designed to achieve a desired end. (Indeed, Colin described his code for *This Is Spinal Tap*, written in C, as "quite ugly" when viewed on its own. For this reason, I believe emulation would be an entirely appropriate means of preserving these titles. Any computer program that can properly *mimic* the behavior of the original code—without having to retain the code itself—would be sufficient.

2) HyperCard Emulator

A logical starting point for preserving these titles, therefore, would be the development of a HyperCard emulator. Apple stopped updating HyperCard more than a decade ago and stopped selling the program in 2004. Though HyperCard will function on a computer using Mac OS X in Classic Mode, it is clearly a

program in danger in obsolescence. Because of its widespread use in CD-ROMs and other applications, a reliable, widely available emulator program is critical to the preservation of large quantities of digital media.

3) Behavior

Voyager CD-ROMs, which were structured to emulate books, are frequently linear, with links that guide the user through a work in a straightforward fashion. One critical component of this format that differs from books is the inclusion of hypertext. Many book-based titles contain links from words or phrases to get definitions or translations, or sound files to provide pronunciation guides, for example. Links may also provide caption information for photos or larger versions of thumbnail images. Although this behavior sounds similar to that of web pages, CD-ROMs are self-contained products with clearly defined boundaries. The content is always present on the CD-ROMs themselves—it simply needs to be accessed properly.

4) Establishing Proper Behavior

Because they were designed to serve as self-contained products for the general public, Voyager's titles, like many commercially produced CD-ROMs, contain the software necessary to run properly. One of the usually critical variables in digital preservation—access to the proper legacy software—is therefore not as much of an issue for Voyager's catalogue. Also, again because of their commercial nature and intended wide distribution, many Voyager titles include detailed, specific

system requirements and often, as mentioned above, their source code—a real boon to potential preservation. These two facts point to a logical means of establishing the proper behavior for Voyager's titles: obtaining the appropriate legacy computers. Admittedly, this approach poses challenges in terms of accessing the archival machines, but as of this writing they are still available. Ensuring the long-term preservation of these titles requires finding the right computer on which to play them.

In addition to securing the appropriate machines to play the Voyager titles, I recommend collecting and documenting information regarding proper behavior from the original programmers themselves. Many of the Voyager programmers are still involved in the digital-media industry, and any project seeking to preserve Voyager titles for the future needs to bring this now-dispersed corporate memory to the table. My own conversation with Colin Holgate made it very clear that potentially confusing or unclear points could easily be resolved simply by working with someone who was there at the beginning. This point may seem obvious, but because of the difficulties in dealing with preserving digital media, many projects end up with an exclusive focus on the objects themselves, unintentionally forgetting to rely on the expertise of the people who created them.

Holgate also pointed me to another, more limited source of potential information about behaviors. In the 1990s, Voyager produced demonstration videotapes of their products in order to show off new titles in situations where CD-ROM drives

might not be available or computers might not be hooked up to projectors for group display (this was necessary only a decade ago!). These videos, though limited in scope, do provide a very accessible demonstration of how Voyager titles behaved at the time of their introduction. Several of these videos are currently available as Shockwave files on the Institute for the Future of the Book[13] website **(www.futureofthebook.org).**

CONCLUSION

Because of their critical role in developing the aesthetics and creative possibilities of the CD-ROM, their overall high quality, and their relatively small number, the titles in the Voyager catalogue provide an ideal opportunity for further work in the field of CD-ROM preservation. It would truly be a shame if—considering both their recent production and the impact they had on a nascent industry—these pioneering titles were left to become inaccessible. Unfortunately, this is a possibility that seems very likely if no further action is taken.

WORKS CITED

Abramovitch, Ingrid. “Radical Voyage,” *Success*, November, 1994, p. 25.

Herther, Nancy K. “Discovering CD-ROM: Hot Titles and Trends.” *Database*, October/November 1996, p. 14.

Hilts, Paul. “Everyman’s Authoring Tool: Voyager’s Expanded Book Toolkit Enables Production of Electronic Books with Multimedia on Floppy Disks.” *Publishers Weekly*, March 1, 1993, p. 18.

Kafner, Katie and Adam Rogers. “How Now, Voyager?” *Newsweek*, October 9, 1995, p. 67–8.

Lewis, Peter H. “Disks for Mac: Voyager Still Leads.” *The New York Times* (Late New York Edition), December 13, 1994, p. C14.

Phone interview with Colin Holgate, December 12, 2004.

“Multimedia *Crucible* from Penguin & Voyager.” *Publishers Weekly,* September 5, 1994, p. 24.

Pack, Thomas. “Bookstores Are Hot: CD-ROM Sections Are Not Yet!” *CD-ROM Professional*, March 1995, p. 40.

Reid, Calvin. “A *Maus* That Roars.” *Publishers Weekly,* January 31, 1994, p. 26.

Snider, Mike. “Criterion: Nobody Does It Better; Its Innovations Set Bar for DVDs.” *USA Today*, June 29, 2004, p. D5.

Trachtenberg, Jeffrey A. “U.S. History on a CD-ROM Stirs Up a Storm,” *The Wall Street Journal*, February 10, 1995, p. B1.

Vickers, Graham. “Now Voyager.” *Creative Review*, February 1997, p. 38.

Virshup, Amy. “The Teachings of Bob Stein.” *Wired 4.07* (1996); accessed December 13, 2004, at http://www.wired.com/wired/archive/4.07/stein_pr.html.

Website: The Night Kitchen. Accessed December 14, 2004, at http://www.nightkitchen.com/aboutnk/index.phtml.

Website: The Institute for the Future of the Book, Accessed December 14, 2004, atwww.futureofthebook.org.

[1] I can speak to this from personal experience. In the mid-1990s, during Voyager's most prolific years, I was working at a home-video company that was trying to dip its toe into the CD-ROM waters. Voyager titles were always the ones for which we sought advance copies. The programmers and producers would gather around the computer to explore them and wonder why we weren't doing work of similar quality.
[2] Snider, Mike. "Criterion: Nobody Does It Better; Its Innovations Set Bar for DVDs." *USA Today,* June 29, 2004, p. D5.
[3] Kafner, Katie and Adam Rogers. "How Now, Voyager?" *Newsweek*, October 9, 1995, p. 67–8.
[4] Lewis, Peter H. "Disks for Mac: Voyager Still Leads," *The New York Times* (Late New York Edition), December 13, 1994, p. C14.
[5] Phone interview with Colin Holgate, December 12, 2004.
[6] Hilts, Paul. "Everyman's Authoring Tool: Voyager's Expanded Book Toolkit Enables Production of Electronic Books with Multimedia on Floppy Disks." *Publishers Weekly*, March 1, 1993, p. 18. As of December 14, 2004, the software can still be downloaded from http://www.futureofthebook.org/tool/.
[7] Pack, Thomas. "Bookstores Are Hot: CD-ROM Sections Are Not Yet!" *CD-ROM Professional*, March 1995, p. 40.
[8] Virshup, Amy. "The Teachings of Bob Stein." *Wired 4.07* (1996); accessed December 13, 2004, at http://www.wired.com/wired/archive/4.07/stein_pr.html.
[9] Herther, Nancy K. "Discovering CD-ROM: Hot Titles and Trends." *Database*, October/November 1996, p. 14.
[10] Trachtenberg, Jeffrey A. "U.S. History On a CD-ROM Stirs Up a Storm," *The Wall Street Journal*, February 10, 1995, p. B1.
[11] Vickers, Graham. "Now Voyager." *Creative Review*, February 1997, p. 38.
[12] Website, The Institute for the Future of the Book, Accessed December 14, 2004, at http://www.futureofthebook.org/content/about/?PHPSESSID=a96a2c00aeaf77e6e908ee8326b5c457.
[13] www.futureofthebook.org.